54P

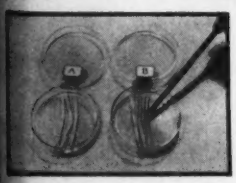
ATLANTIC FISHERMAN

JANUARY 1954

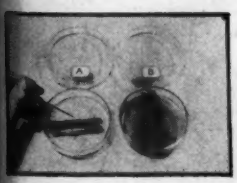
SERVING ATLANTIC COAST • GULF OF MEXICO • GREAT LAKES

In this incubator at Columbian laboratories, mill-run samples of treated Columbian Manila Rope fibres are subjected to attack by "green mold" to give accurate check on each production lot.

Laboratory TESTS Prove Power of Special Columbian Treatment



Treated fibres from mill-run sample in dish "A" are sprayed with especially active spores of "green mold." *Untreated* fibres in control dish "B" are also sprayed.



Two weeks later, treated fibres in dish "A" are still clean. Mold spreads rapidly over untreated fibres in dish "B", already making rope practically useless.

Since November, 1943, Columbian laboratory and production specialists have conducted intensive research and application studies on one of the most significant advances in rope-making history.

Ten years of field and laboratory investigation have resulted in reliable standards of protection against rot caused by fungi, mold, mildew and bacteria.

The new protective substances — called fungistatics — have proved effective in thousands of carefully controlled experiments. They have been tested for all types of cellulose-attacking organisms found in soil, air, fresh and salt water.

Used-rope samples and performance reports sent in by Columbian experts in all parts of the world confirm laboratory results.

Now we can say with full assurance:

- *Every foot of Columbian Manila Rope is adequately protected against decay for YOUR climate, YOUR uses, YOUR methods of handling!*

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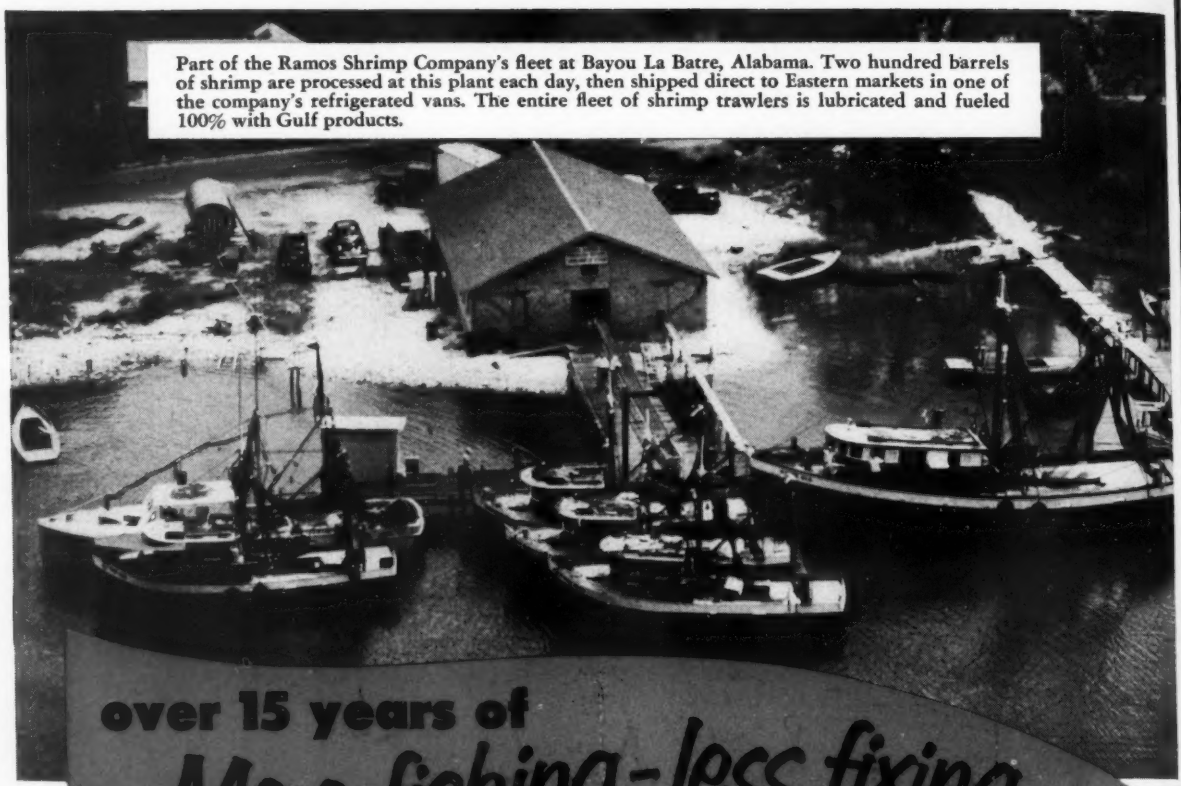
COLUMBIAN ROPE COMPANY
Auburn, "The Cordage City", N. Y.

THE ROPE WITH THE RED, WHITE AND BLUE MARKERS

Boston Office and Warehouse — 38 Commercial Wharf



Part of the Ramos Shrimp Company's fleet at Bayou La Batre, Alabama. Two hundred barrels of shrimp are processed at this plant each day, then shipped direct to Eastern markets in one of the company's refrigerated vans. The entire fleet of shrimp trawlers is lubricated and fueled 100% with Gulf products.

over 15 years of *More fishing-less fixing*

with GULF QUALITY LUBRICANTS and FUELS

"For over fifteen years our fishing fleet has used Gulf Lubricants and Fuels," says Mr. J. S. Ramos, owner of the Ramos Shrimp Company. "During that time we have never had an engine failure that could be attributed to these outstanding products. We recently overhauled an engine that had been in continuous service for five years—and not one ring was stuck. We are also very happy about Gulf's fine service."

Many other fishing boat operators, whose safety and livelihood depend upon efficient and continuous engine operation, share Mr. Ramos' reliance on Gulf products and service—a reliance that is based on years of outstanding performance.

Your Gulf Marine Dealer now has his pumps equipped with micronic filters to insure that the fuel being delivered to you is as clean as when it left the refinery. Just another advantage of doing business with your Gulf Dealer.

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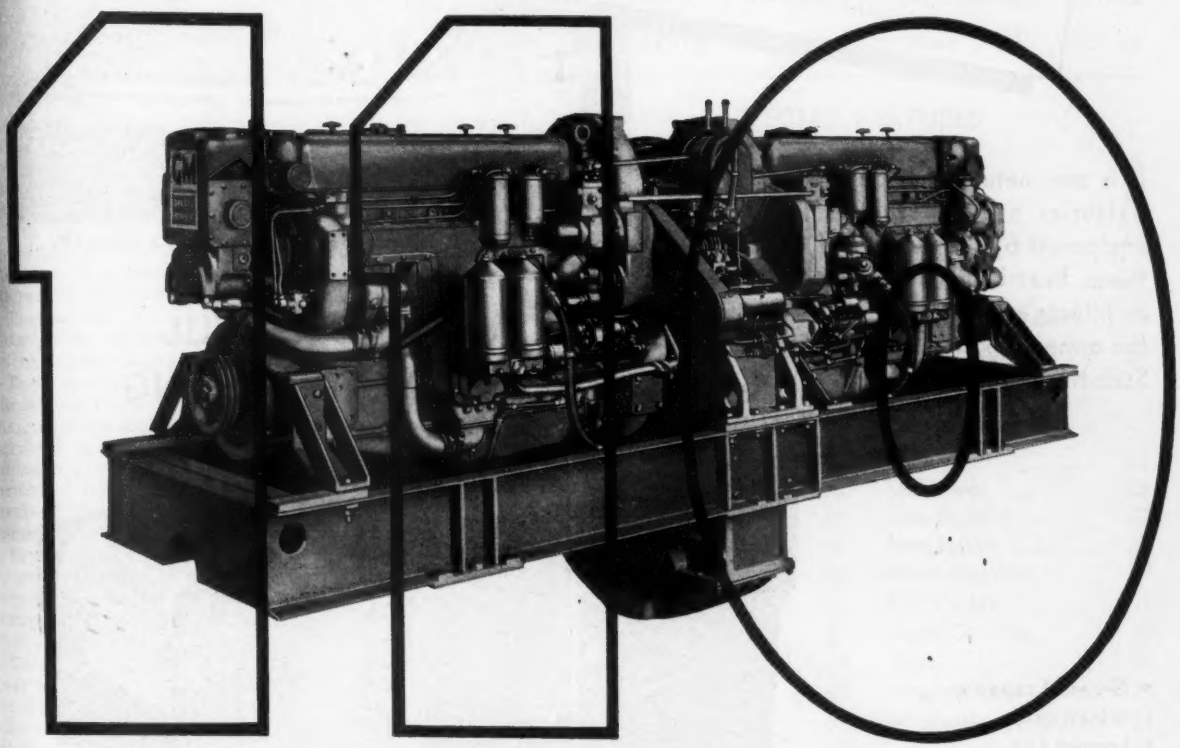

The "110" Tandem Twin

★ ***409 Continuous Shaft Horsepower***

★ ***20% to 40% Lower Cost***

★ ***Twin Engine Dependability***

★ ***Clean, Compact Lines—Lighter Weight***

Meet the newest member of the General Motors Marine Diesel family—the power-packed "110" Tandem Twin.

Now you can have the *double dependability* of a more powerful GM Diesel Twin—530 horsepower for pleasure craft—a full 409 horsepower at the shaft for round-the-clock, heavy-duty work in tugs and fishing boats.

Like all GM Diesels, this new "110" Twin operates on the *2-cycle* principle—delivers smoother, steadier, more responsive power. It's more flexible, too, because you can shut off one of the engines when not needed. One engine running alone will propel a single-screw boat at 80% of its normal speed.

The slim, low silhouette of its tandem arrangement lets this unit fit in a smaller engine room, leaves more room, more space for fuel and pay load. And its clean, simple design, with ready accessibility for servicing, means easier, lower-cost maintenance. Its parts cost much less too.

But the big news is its low price. Here's a reserve of GM's time-proved Diesel power in a compact, lightweight marine unit that gives you the extra dependability and safety of twin engine operation—all at a price that's 20% to 40% less than any other Diesel of comparable power.

The new "110" Tandem Twin is available with port or starboard rotation; finger-tip GM hydraulic reversing; reduction gears up to 6:1; front power take-off for either engine and push-button electric starting. Your local GM Diesel distributor will gladly give you full details. Call him today, or write us for complete specifications.

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ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN

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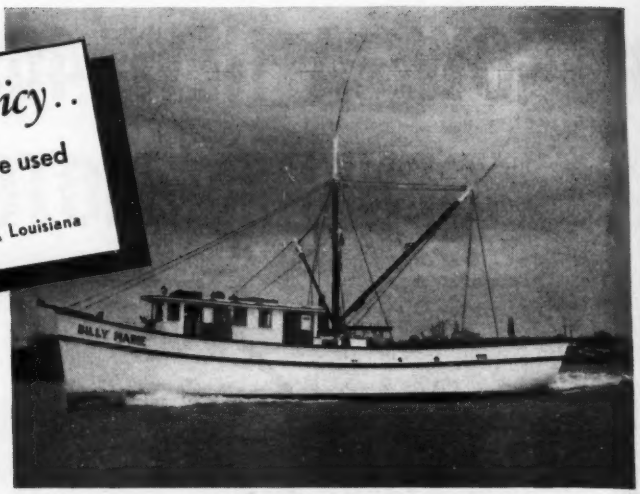
"only the best materials available are used for our ships."

Parker Conrad, Conrad Industries, Morgan City, Louisiana



BILLY MARIE — owner VERNON BOYNT — builder CONRAD INDUSTRIES

It is only natural that Surrette Marine Batteries are selected as standard equipment by the builders of our finest fleets. Boat builders everywhere, naval architects — yes, and most important the owners who want the BEST, specify Surrette Batteries.

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- Thick — high — positive plates.
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Surrette Supply Company, Peabody, Massachusetts
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Leo's Battery Service, New Bedford, Massachusetts
Robert Horman, New Haven, Connecticut
West Haven Shipyard, West Haven, Connecticut
Maripet Supply Corporation, New York 17, New York
Freeport Marine Supply, 51 W. Merrick Rd., Freeport, New York
George Wingerter, 164-02 Cross Bay Boulevard, Howard Beach, L. I., New York
Marine Electric Corporation, Brooklyn, New York
United Boat and Dock Service, City Island, New York 64, New York
Sutter Brothers, Gerritson Beach, Brooklyn, New York
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Marine Equipment & Supply Company, Philadelphia 6, Penna.
Johnson & Towers, Philadelphia, Pennsylvania
Nat Gates Jr. & Son, Annapolis, Maryland
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Surrette **MARINE BATTERIES**

Surrette Storage Battery Company, Inc., Jefferson Avenue, Salem, Mass.

Editorial

Frozen Seafood Has Big Sales Potential

A year-end analysis of frozen food distribution indicates that during 1953 the frozen food industry registered another impressive gain in sales. According to Joseph Gaudio, president, National Wholesale Frozen Food Distributors Ass'n, total sales for the year of all types of frozen foods, except ice cream, is estimated at 5,895 million pounds edible weight—an increase of 13 per cent over the year before.

The per capita consumption of frozen foods is now 36 pounds a year, twice the 17 pounds consumed only four years ago. Before 1948, except for a brief depression period following the war, the volume of frozen foods packed and consumed doubled about every five years. During the five years since 1948, however, volume has nearly tripled.

This has been due to several causes—to a continued gain in popularity of the older frozen foods, for one thing, but most importantly to the many new frozen products offered to the American housewife since 1948.

The success of some of the new frozen products introduced since 1948 has been fabulous. Concentrated fruit juices are an example of this.

Their success has had a profound effect on the way the citrus crops are being marketed. As recently as 1950, the combined California-Florida orange crop was sold 53 per cent in the fresh state, 26 per cent as canned, single-strength juice, and only 21 per cent in the frozen, concentrated form. In 1953, however, these percentages were: fresh—39%, canned, single strength—15%, and frozen concentrate—46%.

Breaded shrimp were first marketed five years ago; 40 per cent of all the frozen shrimp sold in 1953 was in breaded form. The 1953 sales of frozen poultry in all forms is estimated at 935 million pounds. This is more than three times the 1948 sale of 295 million pounds.

Though consumption of fish fillets now is comfortably over that of five years ago, the sales curve has been static for the last two years. Cheaper prices for meat is generally accepted as the reason for this. Many of the fillet packers believe, however, that the breaded fish sticks fabricated from the fillets will change this situation. The sticks, with their convenience appeal ("Just heat and serve"), were marketed on a national basis for the first time in 1953. Figures covering their sales for the year are not available, but it is known that their success has been remarkable. "The sticks will do for the fillets what breading did for shrimp," is a statement frequently repeated in the trade.

By the end of 1953 the frozen food industry's products were supplying somewhere around 5 per cent of the sales volume of the country's retail food stores. More than 235,000 retailers owned zero cabinets, and new capacity was being added at an accelerated rate. The feeling in the trade is that the present 5 per cent rate of sales can be worked up to 10 per cent within the next few years, and there are some optimists who are talking of the day when the retail grocer will be doing 20 to 25 per cent of his business in frozen foods.

The rapid growth of the frozen food business is a boon to the fishing industry. With consumer size packages of frozen fish and shellfish that can be sold on a national basis, there is a tremendous opportunity for sales expansion. While distribution of fish products has been widened in recent years, there still remain many virtually untapped markets that are waiting to be exploited.

To take advantage of its sales potential, the fishing industry must be alert to developing new products, improved processing techniques, and modern packaging. By offering top quality fish and shellfish that are appetizing, economical and easy to prepare, the industry can be assured of an ever-growing consumer demand.

ATLANTIC FISHERMAN

REGISTERED U. S. PATENT OFFICE

Serving the Commercial Fishing Industry on Atlantic Coast, Gulf of Mexico, Great Lakes

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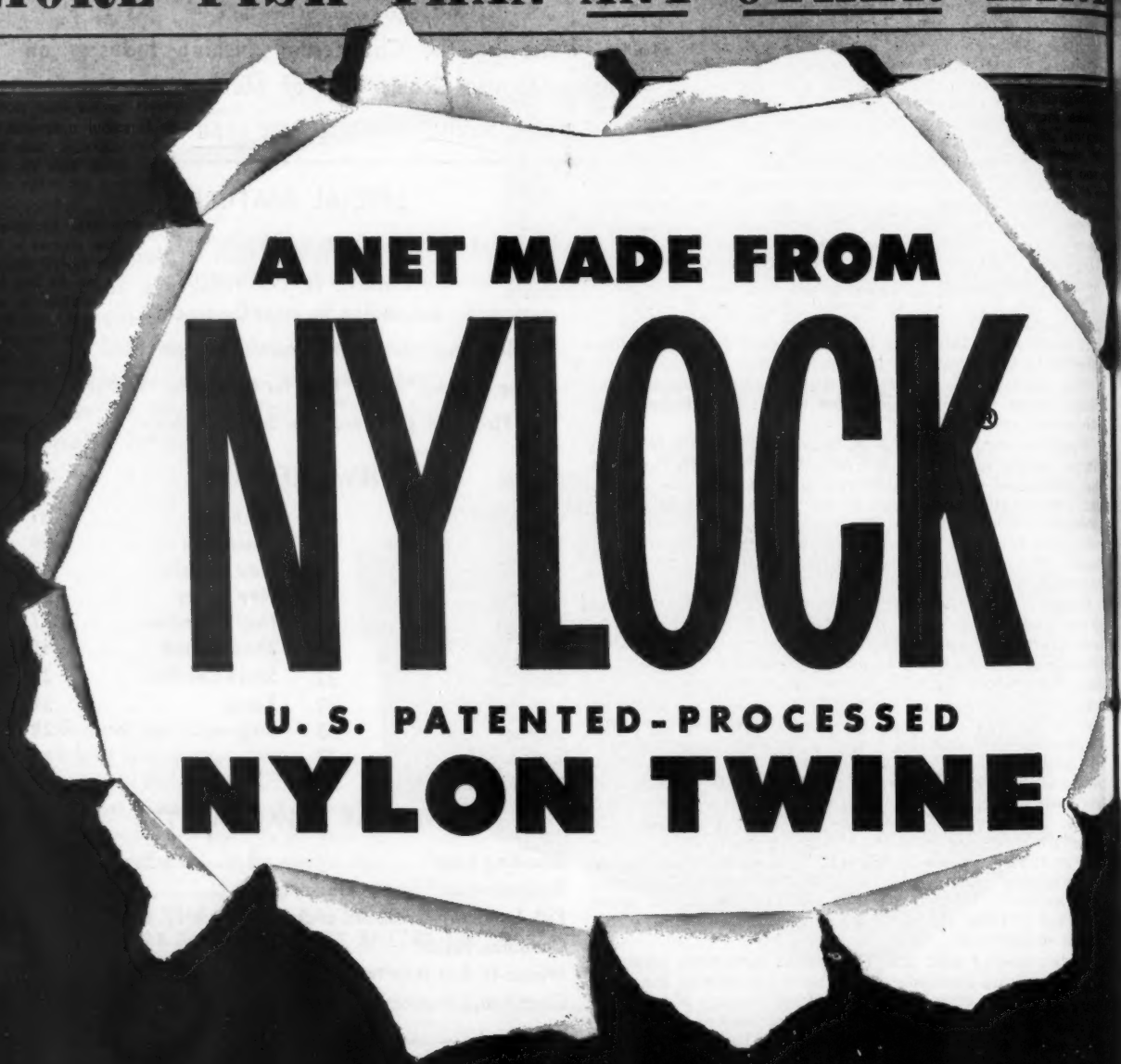
FISHERMEN REPORT ONE NET CATCH
MORE FISH THAN ANY OTHER KIN



CATCHES MORE FISH EASIER TO HANDLE (ABSORBS LESS WAT

HAS LESS KNOT SLIPPAGE NEEDS NO PRESERVATIVES—NO DRY

WEARS LONGER REQUIRES LESS CARE DOES NOT FRAY OR F

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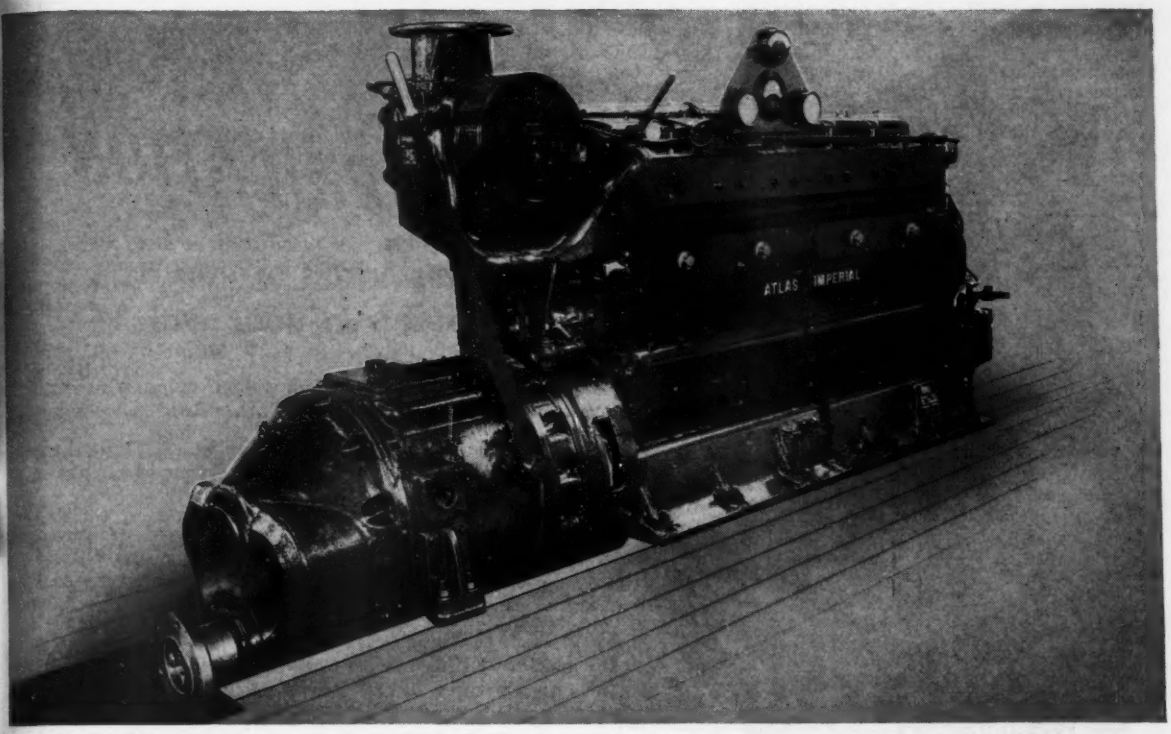

performance **plus!** .... with the Atlas Model 35 Marine Diesel!

For new operating economy and trouble-free hauls, here is Atlas performance that is tailor-made for every type of workboat and fishing craft. Simple engine design means easy maintenance and lower weight per horsepower—while precision parts and heavy duty frame insure exceptional long-life and no expensive repair bills.

Like the complete line of Superior and Atlas Marine Diesels, the Atlas 35 has the built-in quality which gives you years of service, dependability and efficiency.

Make sure you have the complete facts on the Atlas 35—ask for a copy of the new bulletin covering this Atlas at the nearest office listed below or write Springfield, Ohio.

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Model Number	No. of Cylinders	H. P.	R. P. M.
35-S2-4	4	110	1000
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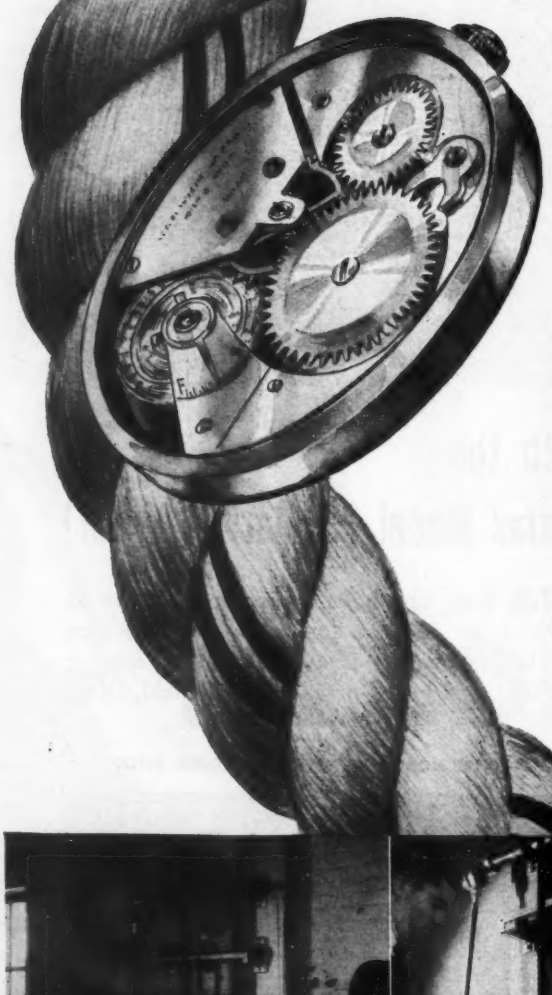
K-ting Rope

CENTER STRAND LUBRICATION

as important to you as the jewels in your watch!



Center Strand Lubrication is a hidden value. You can't see it. But because it's there, your K-ting Rope lasts longer.

It's like the jeweled bearings in a fine watch. Omit them and the watch still runs. But without jeweled bearings it won't run as well or last as long.

When rope is pulled tight, the strands try to straighten out. They squeeze each other in the process—hard—and tiny pieces of rope fiber are chewed off. It's this internal friction, caused by the rubbing of the strands where they cross, that makes rope wear out.

In making K-ting Rope, the Center Strands are run through a bath of special lubricant, and serve as internal reservoirs. Then, as the rope is used, this lubricant works outward slowly, helping to reduce internal friction, and thereby enabling your rope to stay strong longer.

Center Strand Lubrication also helps to keep your rope flexible in water. For if the rope fibers are kept lubricated, they haven't a chance to absorb moisture.

It will pay you to try K-ting Rope on your next order. It costs no more, yet when you use K-ting, you enjoy the peace of mind that comes from knowing you couldn't have bought better.

K-ting Rope

Manufactured by

CATING ROPE WORKS, INC., MASPETH, N. Y.

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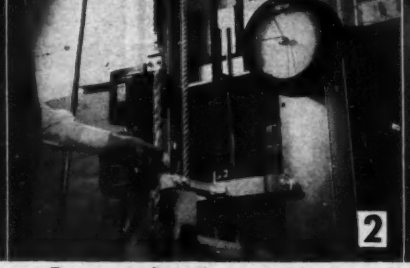
This machine was specially designed for testing rope durability. A new piece of manila rope is attached and a switch thrown. The rope begins to move back and forth over a sheave, while under tension.



By means of previous tests, the exact number of strokes at which the rope will wear through has been determined. When the half-way mark is reached, the machine is stopped, and the rope removed from it.

The half-worn rope is then tested for tensile strength. If two pieces of rope have the same strength when new, the K-ting lubricated rope may be twice as strong as the other after receiving the same amount of wear.

Sounding-Lead

Research and market promotion in fishing industry would be expanded under terms of bill to be introduced soon by Senators Saltonstall and Kennedy of Massachusetts. The two Senators are jointly sponsoring legislation to transfer to Fish and Wildlife Service entire 30 per cent of gross receipts from duties collected under customs laws on imported fishery products. Based on present receipts of custom duties, adoption of bill would mean an annual appropriation of from $3,000,000 to $4,000,000 for fisheries work, as compared with $175,000 annually now being used. The difference now is going to agriculture instead of to fisheries research.

Senators Kennedy and Saltonstall claim studies are long overdue on reasons for fluctuations in supply of fish. In technological field, they stated, development should be undertaken of chemical tests for freshness of chilled and frozen fish and shellfish, so as to provide means for control of quality.

The Senators want receipts and wholesale prices to be collected in eight large consuming cities not now covered by Market News Service. These are Philadelphia, Baltimore, Cleveland, Detroit, St. Louis, St. Paul, Los Angeles and Pittsburgh. Saltonstall and Kennedy said useful surveys also could be made in New York and Chicago to determine changes in marketing since the advent of frozen packaged fish and shellfish products.

Equipment for electrocuting of salt-water fish is to get extensive tests in American waters. A converted German mine sweeper, the R-96, has left for two years of experimental operations in United States waters.

It is said that the "revolutionary German development" will produce huge catches of ocean fish suitable for the dinner table by merely twisting electric dials. Previously, it is reported, such methods could be used only in fresh water.

At the conclusion of the United States tests, the new equipment is slated to be manufactured on a large scale. It is reported that the German invention calls for use of live electrical poles fitted to lines of trawler's gear. The poles send out "impulse electricity" which stuns fish and sends them tumbling helplessly into the nets.

Amended haddock fishing regulations became effective January 1, in accordance with provisions of International Convention for the Northwest Atlantic Fisheries. Proposal adopted makes certain changes in definition of average mesh size in trawl nets when wet after use and authorizes Contracting Governments to exercise discretion in determining such average mesh size.

The new regulations provide: (a) No person shall engage in haddock fishing in the Northwest Atlantic Ocean north of 39°00′ north latitude and west of 42°00′ west longitude with a trawl net or nets, parts of nets or netting having a mesh size of less than four and one-half inches, as defined in this part.

(b) As used in this part, the term "mesh size of less than four and one-half inches" shall mean: (1) With respect to any part of the net except the cod end, the average size of any twenty consecutive meshes in any row located at least ten meshes from the side lacings measured when wet after use, and (2) with respect to the cod end, the average size of any row of meshes running the length of the cod end located at least ten meshes from the side lacings, measured when wet after use, or, at the option of the user, a cod end which has been approved, in accordance with paragraph (d) of this section, by an authorized representative of the director of the Fish and Wildlife Service, as having a mesh size when dry before use equivalent to not less than four and one-half inches when wet after use.

(c) All measurements of meshes when wet after use shall be made by the insertion into such meshes under pressure of not less than ten nor more than fifteen pounds of a flat wedge-shaped gauge having a taper of two inches in nine inches and a thickness of three thirty-seconds of an inch.

(d) For the purpose of approving dry cod ends before use, as contemplated by paragraph (b) of this section, the average mesh size of such cod ends shall be determined by measuring the length of any single row of meshes running the length of the cod end, parallel to the long axis of the cod end and located at least ten meshes from the side lacings, when stretched under a tension of two hundred pounds, and dividing the length by the number of meshes in such row: Provided, that not more than ten per cent of the meshes in such row shall be more than one-half inch smaller when measured between knot centers than the average of the row.

Cod ends so measured which are constructed of the twines and are of not less than the average mesh sizes specified in the following list may be approved for haddock fishing by any duly authorized employee of the Fish and Wildlife Service by the attachment to such cod end of an appropriate seal or seals: twine—4-ply 45-yard manila, double strand; average mesh size—5⅝"; 4-ply 50-yard manila, double strand; average mesh size 5⅜"; 4-ply 75-yard manila, double strand; average mesh size 5⅜"; 4-ply 80-yard manila, double strand; average mesh size 5½"; 109-thread cotton; average mesh size 4¼"; all nylon; average mesh size 4¼".

Removing, altering, defacing or in any other way tampering with seals affixed to cod ends in accordance with the above is prohibited.

World fishing boat committees have been formed as result of resolution adopted at recent International Fishing Boat Congress in Miami Beach, Fla. Decision was unanimous to formulate permanent committees for both Eastern and Western Hemispheres. These committees will continue world effort to develop and extend interchange of technical information on all matters pertaining to design, construction, powering, safety and security in operation of fishing vessels, and will implement wisdom gains through technical papers presented and discussions held at the Congress.

Members of permanent committee representing Western Hemisphere are: H. C. Hanson, naval architect, Seattle, Wash., chairman; Wm. C. Miller, marine engineer, San Diego, Calif., secretary; Geo. C. Nickum, naval architect, Seattle, Wash.; Francis Minot, Marine Fisheries Engineering and Research Institute, Woods Hole, Mass.; Dwight S. Simpson, naval architect, Newton, Mass.; Howard I. Chapelle, naval architect, Cambridge, Md.; Jorge M. Sanchez A., naval architect, Mexico; Carlos Santa Maria, (Pro Tem for Chile), New York, N. Y.; and Wm. S. Hines, Department of Trade and Industry, Halifax, N. S.

Tri-state fish study plan has been recommended by a Virginia special State legislative commission on conservation of finfish. Group has urged that expanded research program costing total of $122,074 be undertaken jointly by Virginia, Maryland and North Carolina to determine cause and remedy for decline in fish catches in salt waters of the three States.

The Virginia commission decided to recommend the research program at suggestion of tri-state investigative committee. The committee found that the "most dramatic decline" had occurred in croaker class. It also noted serious declines in catches of shad, sea trout, butterfish, porgy, bluefish and others.

Among possible reasons advanced by fisheries officials of three States for decline in catches were heavy fishing pressure, poor spawning success, destruction of young fish by trawls and haul seines, rising water temperatures and changing current patterns in Atlantic, and pollution and "other effects of human activity on our coastal waters and streams."

Rich ocean perch fishery has been developed off West Greenland by Icelandic trawlers, and record catches have been made. Fish will be filleted and shipped to Russian market in accordance with provisions of Russian-Icelandic trade agreement.

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- ✓ Prompt processing and factory delivery on parts not normally stocked in local warehouses.
- ✓ Quick handling of all routine or emergency overhaul work.
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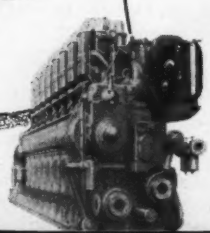
ADD IT ALL UP and it pays to buy ENTERPRISE—backed by ENTERPRISE Specialized Service.



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Our house? Built with wire rope?

Not only yours, Mr. Brown, but millions of others too.

A miracle of the postwar years has been the construction of more than 7-million new dwelling units. Accomplishment of this tremendous task has called for "muscles of steel"—rugged wire rope that is a vital factor in mining the ore, quarrying the stone and bringing out the timber that comprise the basic components of every house and building—large or small.

Supplying these "muscles of steel" to the giant that is American industry is our big job here at Wickwire—a job we've been doing well for over half a century.

In the mines . . . the quarries . . . the logging camps—and wherever wire rope is used, they'll tell you that for utmost safety, longer life and most economical service you can always count on the quality and strength that is built into Wickwire Rope.

A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

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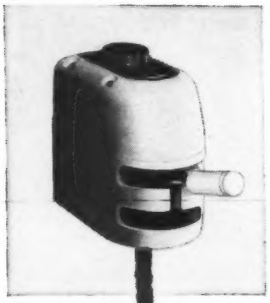
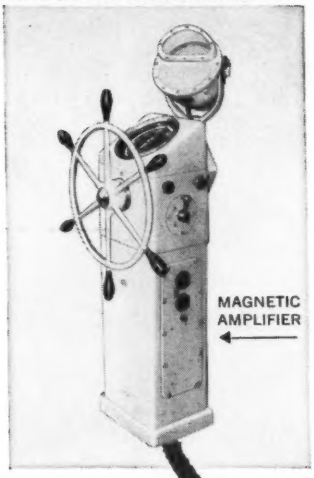
WICKWIRE ROPE
CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

1873

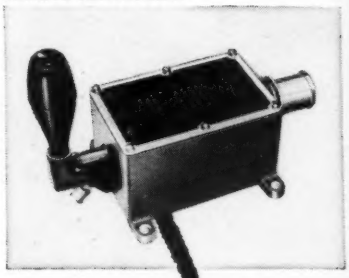
LEVER PILOT



ELECTRIC STEERING STAND
Also applies to Gyro-Pilot, Triple Steerer, Electro-Mechanical Steerer.

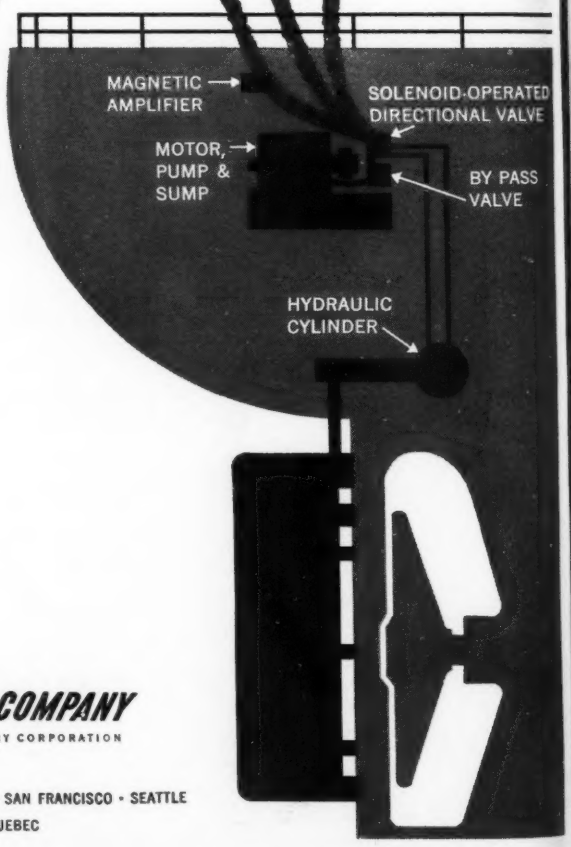


REMOTE CONTROLLER



INTRODUCING...

COMPLETE ELECTRICALLY CONTROLLED HYDRAULIC STEERING SYSTEMS



■ For smoother, more positive ships' steering control, Sperry has engineered completely integrated Electro-Hydraulic steering systems combining precise Sperry electric controls with dependable hydraulic power components from its associate company, Vickers Incorporated. Now, for the first time, ship operators can have an economical, *complete* Sperry system of steering, utilizing the advantages of hydraulic power and electric control.

■ These complete systems are versatile in usage . . . they can be directed by any of the following Sperry controls: Gyro-Pilot*, Electric Steering Stand, Lever Pilot, Triple Steerer, Magnetic Compass Pilot, Electro-Mechanical Steerer or Remote Controllers. Each of these units controls the proper size hydraulic steering gear engineered to the vessel's requirements.

■ If you desire accurate, effortless steering for your vessel, write our nearest district office for complete details. Our extensive service organization backs all Sperry equipment.

ADVANTAGES OF ELECTRO-HYDRAULIC STEERING SYSTEMS

Fingertip action controls steering engine—eliminates need of large wheel.
Dual controls can be simply installed for steering from vantage points.
All-electric control from wheelhouse eliminates lengthy hydraulic tubing.

*TRADE MARK

SPERRY GYROSCOPE COMPANY
DIVISION OF THE SPERRY CORPORATION

GREAT NECK, NEW YORK • CLEVELAND • NEW ORLEANS • BROOKLYN • LOS ANGELES • SAN FRANCISCO • SEATTLE
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FAMOUS LAST WORDS:

Let's face it—they won't send out advance warning notices of atom-bomb attacks. They just sneak over and let go when we're least expecting it—without even so much as a declaration of war. The emergency may be an atom bomb or it may be a fire, a flood, a hurricane. It's only good business to be ready for it—whatever it is. Take these precautions TODAY:

- ☐ **Enlist the help** of your local Civil Defense Director.
- ☐ **Check contents** and locations of first-aid kits.
- ☐ **Send staff** to Red Cross courses. They may save your life.
- ☐ **Promote preparedness** in your community. Your local CD Director can show you how.

Set the standard of preparedness in your plant city—check off these four simple points NOW.

"I don't fish by guesswork now. I can see the fish on FISCHLUPE," says Richard Dobbin, Captain of the "Flying Cloud," the first of six trawlers of the Irving Usen Trawling Company, Boston, to be equipped with the new electronic fish-finder. "Not only do schools of fish show clearly on FISCHLUPE, but I can tell the difference between hard and soft bottom, cod from haddock, large haddock from small haddock. Yes, I can even pick out single fish, easily spot a dogfish. Unless I see a large catch on FISCHLUPE, I never drop my nets. Cuts days off our trips."

NEW Electronic Fish-Finder

...more profits in less time

Lawrence Rosen, Vice-President and Marine Superintendent of the Irving Usen Trawling Company

Here's proof of its effectiveness: "Because of the proven success of FISCHLUPE aboard the 'Flying Cloud,' says Larry Rosen, "I am equipping the entire Usen Fleet with them."

WRITE FOR COMPLETE DETAILS TODAY!

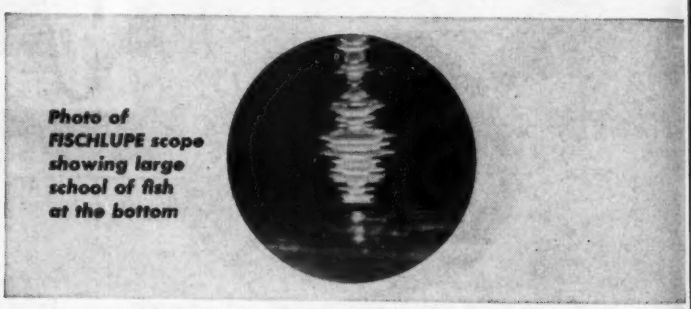


Photo of FISCHLUPE scope showing large school of fish at the bottom

FISCHLUPE* locates fish, spots underwater hazards that can hang your nets, aids navigation and functions as an underwater depth indicator. This most modern depth sounder is especially designed to function as an electronic fish-finder. No special knowledge is required to operate it. Supersonic signals are transmitted downward, reflect back from seabeds, schools of fish, rocks, wrecks, and plankton. You can see these clear visual indications from fish or other objects on the cathode ray tube. By merely flicking a switch you can magnify any eight-fathom segment of the normal maximum depth range of 320 fathoms. This allows you to examine objects at close range. The size of your haul can be estimated and unprofitable drags can be prevented.

*"Fish-Lens"

RADIOMARINE CORPORATION OF AMERICA, *75 Varick St., New York 13, N. Y.*
Offices and Service Stations in principal ports

RADIOMARINE CORPORATION of AMERICA

A SERVICE OF RADIO CORPORATION OF AMERICA

Financing of Fishing Boats and Equipment

R. S. Murphy* Describes Role of Financial Institutions In Aiding Expansion and Modernization of the Fisheries

THE company which I represent has for years financed many kinds of income-producing vessels. These have included fishing vessels and work boats, tugs and barges, tankers and lighters. We also have financed the installation of machinery and equipment in vessels—such things as engines, radios, navigational aids and underwater fish-finding instruments. We have enjoyed the opportunity to play a supporting role in the impressive growth of the fishing industry.

All of you, naturally, are familiar with the constant advances being made in our knowledge of the sea and its fish. And you are equally familiar with the remarkable progress being made in fishing equipment—such as the adaptations of wartime sonar devices to aid in finding shrimp, menhaden and other fish which support your industry. The fishing business is constantly changing. Many fishermen are working much farther from port than they ever have before and fishing equipment and operations are becoming increasingly costly.

In order to meet the climbing costs of boats and equipment, the fishing industry often needs outside capital—and this is where the role of the industrial financing institution comes into play.

My observations are based on the policies and practices of my company. Other institutions of a like character have, to a greater or lesser degree, comparable policies and follow similar practices. So I believe our experience can be taken as representative of our type of financial agency.

Two Methods of Financing Boats

We have two major methods of financing the fishing industry. The first is to work with the engine dealers or yards; the other is to handle the financing directly with the fishermen.

The largest volume of our fishing vessel financing is done through dealers or yards. In these cases, the dealers and yards decide whether the credit of the fisherman is acceptable. They know him personally, they know his skill as a fisherman, the port from which he operates, the grounds he probably will work and how he will dispose of his catch. They also decide what the down payment will be and what terms of repayment will be set.

Usually the terms call for a down payment of at least 25 per cent of the purchase price with the balance to be paid in three years in equal monthly instalments. Naturally, this isn't a hard and fast rule and contracts on some of the larger boats have been written with terms of four and five years.

However, the dealers and yards ordinarily are not so capitalized as to carry large quantities of notes with their own funds. So the industrial financing company discounts the completed transactions for them, in order to replenish the dealers' or yards' supply of cash. Thereafter, the financing firm collects the notes directly from the fisherman.

We reserve the right to check the credit of the fisherman and to accept or not accept the individual risk. But we cannot hope to know each fisherman as well as he is known by the engine dealer or yard, and since the transactions are purchased with recourse, we generally rely on the sellers' credit decision and buy the transactions when they are submitted. It is through this arrangement with sellers that we have handled the financing of a large number of fishing vessels.

We are prepared to finance fishing vessels directly for the fisherman in given sets of circumstances. Naturally we cannot handle financing that requires progress payments during construction of a vessel. The industrial finance agency needs a complete documented vessel as security at the time its funds are disbursed. And we cannot finance a captain who can supply a down payment but has no other boats or property, no previous history as an owner, and no partners or endorsers. But except for such cases, the established captain has boat and equipment financing available.

For example, we have handled the financing of complete fishing vessels for owners or captains who already have one or more vessels and are enlarging their fleets by the addition of another boat. Credit judgment in such cases is based on statements showing a profitable operation of the owners' existing equipment and an investigation of his character and fishing experience.

Also we work with an owner or captain who is buying a vessel jointly with other partners or investors. In this case, credit approval follows a satisfactory investigation of the partners' financial statements, plus an appraisal of the captain's experience and ability. For instance, we recently financed a trawler for a captain who had two well-known physicians for partners. For the doctors, of course, it was simply an investment with a fisherman whose skill and honesty they respected. And, by the way, it has been a successful partnership.

In some cases we have worked with an owner or captain who has a contract with a processing plant to take his catch. In such instances the processing plant which is itself acceptable credit-wise endorses the notes for the captain.

Terms in these individual cases are fairly flexible and often are tailored to suit the special needs. But the general rule—as in our contracts with dealers—is a down payment of at least 25 per cent of the purchase price. The balance is usually paid in not more than thirty-six monthly instalments, although some transactions have been written with longer terms.

Financing of Equipment Purchases

Modernization and replacement of equipment and machinery plays a major part in the fisherman's life. Another form of financing for fishermen is available to meet these problems. Terms are arranged for financing new engines or for replacing or adding various types of mechanical and electronic gear so necessary to modern fishing. Engines and other equipment are frequently financed through the machinery dealer in the fashion previously discussed. The financing can also be arranged directly with the fisherman.

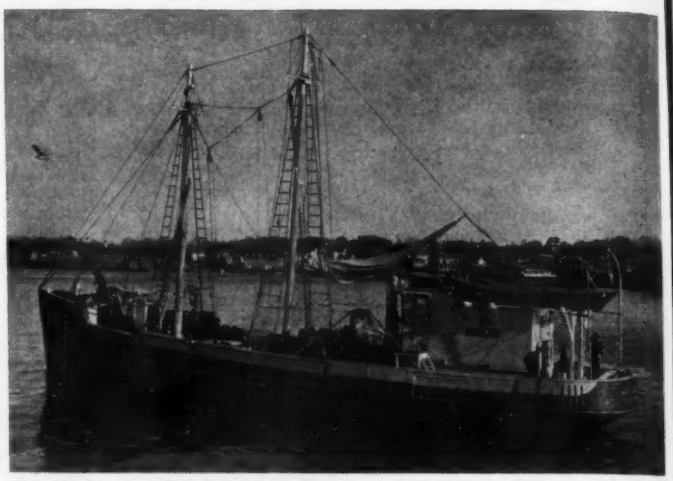
This is done by the fisherman giving the financing firm a mortgage on the vessel he owns. Usually the vessel, with the new equipment added, has sufficient value to make a down payment on the equipment unnecessary, although it is preferable to have one. If the value is in doubt, the financial institution arranges for an independent appraisal to determine the dollar value of financing suitable for the vessel.

In a general way, that's the picture of the financing available to fishermen. These are patterns already set up and tried in practice to cover many financial problems that the fisherman may have.

Financial institutions recognize that opportunities lie in growing industries. The fishing industry is growing in importance throughout the world and nowhere is its growth more apparent than in the waters of the Caribbean and Gulf—particularly in the shrimping industry. Since we have confidence in the future of the fishing industry, our objective is to aid in its growth through helping to finance the boats and equipment that are needed.

*Vice president of C. I. T. Corporation, New York City, who addressed recent meeting of the Gulf and Caribbean Fisheries Institute at Miami, Fla.

"Holy Family" Gets More Speed, Capacity with Opposed-Piston Diesel



The 94' dragger "Holy Family" of Gloucester, Mass. which was repowered with a 455 hp. opposed-piston Fairbanks-Morse Diesel.

REPOWERED with a new small opposed-piston Fairbanks-Morse marine Diesel, first of its kind to see actual service, the 94-foot dragger *Holy Family* has become one of the fastest fishing boats of her size operating out of Gloucester, Mass. She is not only 20 percent faster but can carry 32 percent more fish per trip.

The new Model 38F5¼ Fairbanks-Morse in the *Holy Family* is a 7-cylinder, 2 cycle unit with 5¼-in. bore and 7¼-in. stroke. It is rated 525 hp. at 1200 rpm. and 455 hp. at 1100 rpm. for dragger service.

Although the new engine provides 42 percent more power than the previous one, its extremely compact design has made it possible to increase the vessel's total cargo carrying capacity from 125,000 lbs. to 165,000 lbs.

The engine is a complete packaged marine unit equipped with air-actuated remote controls, heat exchanger, lube cooler, air compressor, pumps and filters. It drives through reverse-reduction gears and has a forward end power take-off with clutch to drive generator and winch.

The greater horsepower and speed achieved with the new engine enable the *Holy Family* to fish in rougher weather, to reach her fishing grounds faster, drag her nets at a higher speed and return to market with a full load of fish in a much shorter period of time.

The vessel's fuel capacity enables her to stay out for more than 16 days without refueling. On a recent trip marked by frequent storms, for example, she stayed out for a total of 14 days. In 304 hours of continuous operation, the new OP engine consumed a total of only 5,624 gallons of fuel oil, burning it at a rate of 18½ gallons per hour. On the same trip, the *Holy Family* consumed a total of only 25 gallons of lube oil, better than 5500 rated hp. hr. per gallon.

Nine years old, the *Holy Family* was built in 1944 at the Jonathan Story Yard, Essex, Mass. She is of all-wood construction, her hull lines being typical of most Gloucester fishing boats. She measures 94' long overall, 21½' wide and 11' deep. Her net tonnage is 64 tons and her gross tonnage 124 tons. The vessel is owned in partnership by Captain Matteo Moceri and Girolamo Lovasco. Sebastian Moceri, one of the Captain's three sons, is chief engineer and Carlo Moceri, another son, is chief mate.

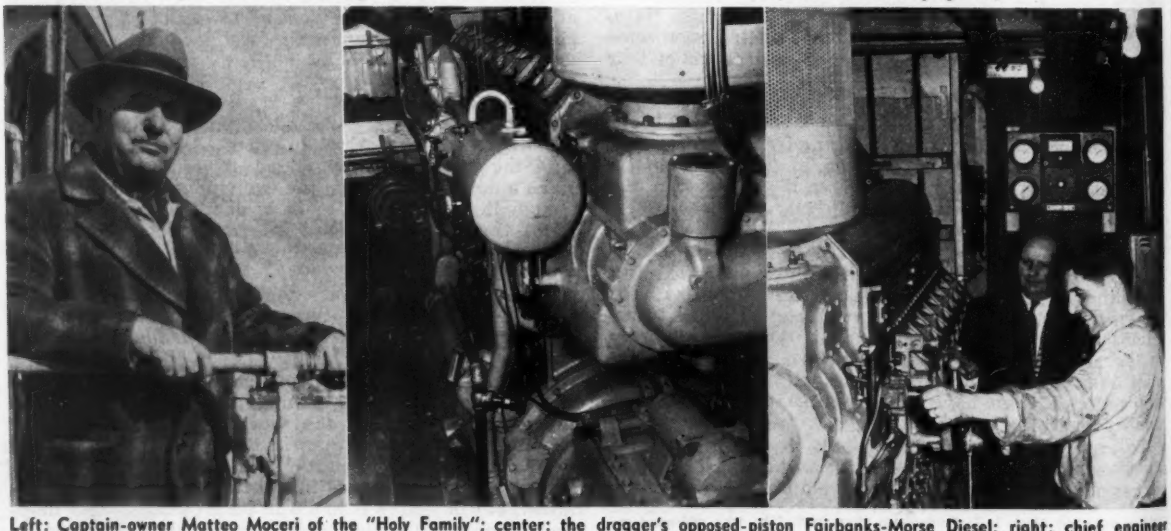
Like many draggers she was originally designed for maximum cargo carrying capacity and not for speed, the theory being that the more weight devoted to main propulsion equipment the less payload you can carry.

The owners were understandably reluctant to trade cargo carrying capacity for additional speed but when the new small opposed-piston engine came along they were able to increase both at the same time. In addition, space was made available for two additional fuel storage tanks, each of 1100 gallon capacity, increasing total fuel capacity from 5,000 to 7,200 gallons.

The new engine drives a four-bladed all-bronze Ferguson propeller of 72-in. diameter and 48-in. pitch through a set of Snow-Nabstedt 3.79:1 reverse-reduction gears. Fuel oil is stored in six storage tanks, four located forward and two aft, passing through a full-flow filter before being picked up by the engine supply pump and sent to the individual injection pumps for each cylinder.

Jacket water is circulated in a closed system by a built-in centrifugal pump, being cooled in a heat exchanger mounted conveniently on the starboard side of the engine. The intake water is kept at an efficient temperature by a thermostatically-operated control valve

(Continued on page 33)



Left: Captain-owner Matteo Moceri of the "Holy Family"; center: the dragger's opposed-piston Fairbanks-Morse Diesel; right: chief engineer Sebastian Moceri at the engine controls.

Methods for Controlling Southern Oyster Drill

Dr. Philip A. Butler* Describes Experiments in Gulf of Mexico Area with New Baited Trap Having One-Way Entrance

THE oyster drill or conch is probably the most destructive single agent affecting the oyster industry of the Gulf States. Incredible numbers of them exist in the estuaries and coastal bays. They are found primarily on the oyster reefs, but are not restricted to any particular bottom type or water depth. They frequent the mean low tide line on rocky shores and are caught in shrimp trawls 15 miles at sea in 60' of water. Although sensitive to salinity levels of the water they occur naturally in the wide range from 15 to 35 ppt., and can withstand entirely fresh water for short periods.

The oyster drill is a very successful animal, biologically speaking, and there is evidence that it is continually extending its range. The occurrence of its shells mixed with oysters in the buried reefs shows that it has been present for thousands of years as a predator in the oyster community.

The sensory keenness of the oyster drill or snail plus its fondness for young oysters makes it possible to place wire bags baited with spat on the reefs and attract large numbers of snails. By inspecting such traps regularly, it is possible to destroy a significant part of a snail population. This method is sufficiently satisfactory so that some private planters have in use over a thousand such traps on their leased beds. Their difficulty lies in the amount of labor required to handle and inspect them at regular intervals.

Little else has been done towards controlling the snail other than the hand-culling which is practiced when tonging or dredging oysters. The use of the suction dredge and screening of the material as done in New England is not possible in the south because of the generally soft nature of the reef bottoms.

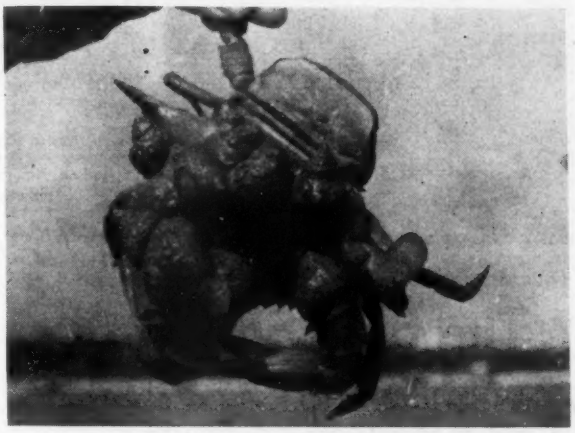
Other factors which should be considered in planning possible control methods include the not very promising possibility of discovering some chemical cheap and selective enough to be dumped in the water to kill just the snails. A somewhat more hopeful idea is that of developing a biological control, such as the trematode parasite which invades the snail gonad and destroys its ability to reproduce.

I offer two suggestions which eventually may prove helpful to the industry. The first of these, so far as I know, is an untouched field, i.e., the use of electrical currents—either in creating barriers to snail migrations or as a lure attracting them to traps. The second suggestion is the invention of a baited trap similar to those now in use but with the important addition that this trap should permit entry but not exit of the snails.

The use of the word trap in connection with the present device is misleading, since snails are able to wander in and out at will and only those are caught which happen to be feeding at the time the "trap" is examined. I believe that a trap permitting only entrance of the snails is feasible. We have done some work on it, using a one-way swinging door in the entrances. Our early efforts along this line were only partially successful, and we did not have sufficient assistance to continue the project. However, I feel certain that with the construction of such a trap on an economical basis, we shall have gone a long way in solving our problem of snail control.

Enemies Are Few

The natural enemies of the mature snail are few. Under experimental conditions we have observed hermit crabs attacking them in order to gain possession of their shells. Stone crabs, if sufficiently hungry, will crack them open and eat them. Probably these two situations do not occur in nature. There are at least two trematodes which parasitize them and may cause considerable damage by invading the snail gonad. These parasites, common in Louisiana waters, are rare in the Pensacola, Fla. area. It is doubtful that even in Louisiana they significantly decrease the numbers of snails.



Conchs attacking crab on Gulf Coast.

Our chief allies in natural control methods are fresh water and cold temperatures. Both of these conditions are of short duration in the oyster producing areas of the south, and such relief as they offer is temporary and likely to harm oysters almost as much as the snails. Those factors causing larval mortality during the free-swimming state are, of course, the primary limiting agents in the life cycle of this animal.

For many reasons it is difficult to assess the amount of damage caused by drills on the oyster reefs. Oystermen in the same area may vary from 0 to 50% in their estimate of loss due to the snail. Dr. St. Amant found in 1937 in Barataria Bay, La., for example, that much loss was being attributed to drills by some oystermen. In a dredged sample of almost 5000 oysters, he found only 92 dead and of these he was able to observe drill holes on only two. Of course, all 92 may have been killed by drills, but as he states, this is still a mortality of less than 2%.

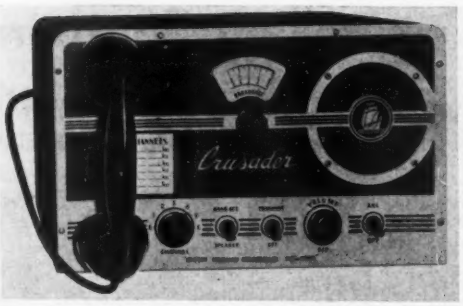
Snails kill mature oysters by drilling them, but they prefer to eat spat and the smaller oysters. It is possible for an oyster reef to support a large population of snails all Summer and show no loss to the casual observer, since the larger oysters remain unharmed. We observed one large snail, for example, that was eating week-old spat at the rate of 86 per day plus large numbers of tiny barnacles. It would have been difficult to observe this loss in the field.

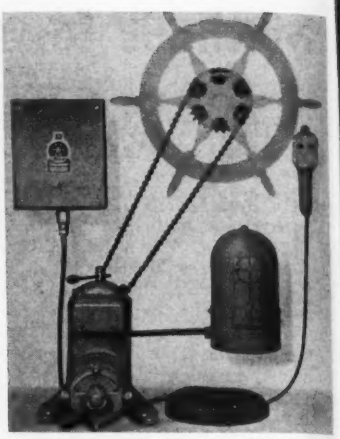
A second difficulty in detecting drill damage in the field results from their habit of opening oysters primarily on the edge of the bill rather than drilling through the more solid portions of the shell. I have combined the data from a large number of controlled feeding experiments and find that approximately 10% of the oysters killed by drills have complete holes through the surfaces of the shell, while 90% were killed through incomplete marginal holes. Three-quarters of those attacked on the margin gave no evidence of drilling to the casual observer.

When complete holes are drilled through the surface of the shell, there is little preference shown in position.

(Continued on page 35)

*Extracted from a paper presented at the recent Oyster Convention by Dr. Butler, who is chief of Gulf Oyster Investigations for the Fish & Wildlife Service.





Left: 10 hp. Johnson Sea-Horse outboard motor.

Center: Hudson American 25-watt "Crusader" radiotelephone.

Right: Bendix Model 125 automatic pilot.

The Boat Show from a Fisherman's Viewpoint

THE Golden Jubilee National Motor Boat Show took place at its mammoth new home, the Kingsbridge Armory in New York City, on January 15-23. A 21-foot, 50-year-old mahogany naptha launch, the *Lillian Russell*, reigned over some 300 modern cruisers, runabouts and sailboats, and focused attention on the 50th anniversary of the National Association of Engine & Boat Manufacturers, sponsors of the Show. In perfect running condition, the veteran craft was loaned by the Mystic, Conn. Seaport of the Marine Historical Association.

The Show exhibits included displays of 24 inboard and outboard engine builders and 122 nautical accessory firms. Many new and improved marine products were shown for the first time, and some of those that have application on commercial fishing boats are described briefly below.

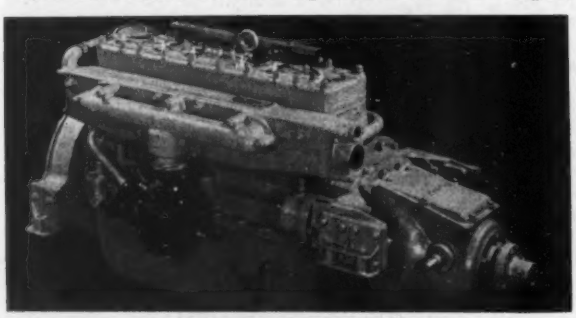
Bendix Offers New Automatic Pilot

A new automatic pilot was introduced by Pacific Division, Bendix Aviation Corp. Incorporating the photo electric principle, the new Model 125 pilot contains a more powerful steering unit for accurate control under all conditions. Similar to the Bendix Model 45 pilot, the unit has been simplified and developed especially for the small boat owner.

The new pilot consists of binnacle assembly, control unit and steering unit. In addition to the standard unit, Model 125 also is available with remote control course changer, dodger and power steering.

Two new depth recorders were displayed, including the DR-12, which has a 2-stage recording feature of 0-50 fathoms and 0-200 fathoms. The instrument incorporates a new dual guide scan stylus which produces very accurate recordings.

The new Bendix DR-10A depth recorder is a compact instrument suitable for small fishing craft. The recorder incorporates a new 3-stage range, permitting accurate recordings up to 75 fathoms. The sending-receiving transducer can be mounted in the bilge, thus allowing installation to be handled by the owner himself, without drilling a hole through the hull.



The 160 hp. Chris-Craft marine engine.

Hudson American Displays New Telephones

Hudson American Corp. exhibited the "Crusader", its new 6-channel, 25-watt radiotelephone for medium and large-size vessels. The 7-channel "Mariner III", is a new 50-watt set. Hudson American's "Privateer III", a 10-watt marine radiotelephone, has 4 channels. All of these instruments have a broadcast band.

The "Buccaneer II", a new high fidelity receiver designed especially for marine use, has a standard broadcast band and a marine band with one crystal controlled channel permanently fixed to 2182 kc.

The company's other instruments which were on display included the following: the "Corsair II", 12 watts, 4 channels and a broadcast band; the "Master Mariner", 80 watts, 6 channels; the "Viking I", 50 watts, 6 channels; and the "Viking II", 100 watts, 6 channels. Also shown were a remote control unit which will enable the operator to switch stations from the bridge, and four types of marine antennas.

Chris-Craft Presents New Engine

Chris-Craft's 1954 marine engine line includes power plants ranging from 60 to 160 hp. Designed exclusively for marine use, all Chris-Craft engines have a low weight-per-horsepower ratio.

Chris-Craft's compact and light 60 hp. series this year offers a new low-priced Model "A" engine. Another "60", the model "B", is available with reductions of 2:1 and 3:1 in addition to the direct drive. Here, as with all other engines, full length water jackets and pre-tempering of coolant in the exhaust manifold help to assure virtually constant operating temperature in the cylinder walls.

The Model "K", which develops 95 hp. at 3200 rpm., is light in weight and yet powerful enough to drive small workboats. Reduction drives are of the internal helical gear and pinion type, and the "K" is offered with direct drive or reductions of 1.5:1 and 2:1. The 105 hp. "KL" is available with direct or reduction drives of 1.5:1 and 2:1.

Chris-Craft engines for use in heavy commercial vessels where peak load and throttle are needed include the "M" series, which produces 130 hp. and offers reductions of 1.5:1 and 2:1. The "ML", 145 hp. engine, can be in-

stalled with direct drive or reductions of 1.5:1 and 2:1. Opposite rotation is available on the 160 hp. Model "W" and most other Chris-Craft engines.

Chris-O-Matic, a new marine device which shifts gears for the skipper, is available for all but the 60 hp. series. With this new electric-hydraulic mechanism, the helmsman simply flips a selector.

Johnson Introduces Quiet Outboard Motor

The "really quiet" Johnson Sea-Horse 5½, winner of the National Noise Abatement Council award, represents one of three significant engineering steps in the 1954 Johnson Motors line. Other developments include production of an electric-starter 25 hp. outboard and re-engineering of the Sea-Horse 10 to include intake silencers and "up-and-off" snap removal hood.

The Sea-Horse 5½ is a completely new motor replacing the Johnson 5. It embodies a revolutionary "suspension-drive" construction which so quells sound that the slap of waves against the bow is audible over the purr of the motor. This new outboard has full gear shift, (forward, neutral and reverse).

The starter on Johnson's new Sea-Horse Electric 25 operates on any automotive-type, 6-volt battery, while the regular manual (pull-cord) starter remains in position for optional use. Push button control is afforded for both starter and choke.

Other models in the Johnson line, the Sea-Horse 3 and the Sea-Horse 25 (standard, non-electric) are continued without major engineering changes. Both the Johnson 25 and Johnson 10 are engineered for instant attachment of the firm's Ship-Master remote control for throttle and shift. Among new Johnson accessories is a fuel pump for simplified attachment to 25 hp. outboards when used with built-in fuel tanks.

Woolsey Has New Bilge Cleaner and Wood Stain

Two new products for boat owners—"Cawkleen", a bilge-cleaning concentrate that keeps bilges clean and free from odors automatically, and "Cawstain", a deep-penetrating stain for plywood and close-grained woods, have been introduced by the C. A. Woolsey Paint & Color Co.

Woolsey's "Cawkleen" is a bilge cleaner that performs its cleaning action with the roll and movement of the boat. Its highly-concentrated cleansing power emulsifies oils, greases and gasoline.

Woolsey's "Cawstain" is a new permanent type penetrating oil stain that is especially-formulated for use on new fir plywood and on new close-grained woods (pine, gum, spruce, cedar, etc.). When applied it simulates in color the rich texture of red mahogany.

Fairbanks-Morse Shows Opposed-Piston Diesel

A smaller version of the opposed-piston marine Diesel that powers U. S. Navy submarines was introduced by Fairbanks, Morse & Co. The new heavy-duty Diesel is designed for use in boats 60 ft. and up.

The new Model 38F5¼ marine engine has a 5¼-in. bore and 7¼-in. stroke, operates up to 1200 rpm., and is available in sizes from 225 to 750 hp. On display at the show was a 375 hp. unit complete with reverse-reduction gears and equipped with forward end drive with clutch and reduction gear for auxiliary generator and winch. The new Diesel, like its bigger counterpart, is designed for continuous heavy-duty service despite its low weight (7100 lbs. for the 225 hp. engine.)

A feature of the Fairbanks-Morse exhibit was a full-size opposed-piston engine in actual operation, cut open to show the two pistons working in each cylinder and other features of OP design. Also shown was a 3 kw. auxiliary Diesel-generator set.

Goodrich Cutless rubber bearings.

Goodrich Rubber Bearings Shown by Moffitt

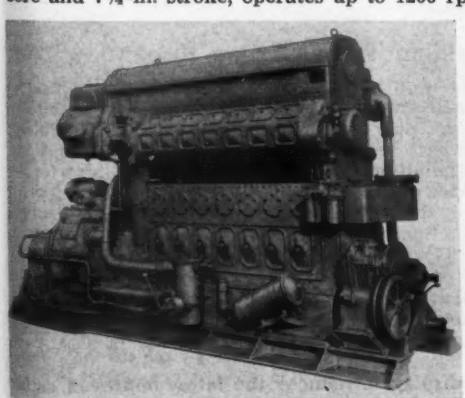
B. F. Goodrich Cutless rubber bearings, which are distributed nationally by Lucian Q. Moffitt, Inc., were on display. Because of their rubber construction, Cutless bearings are unique in that they are lubricated by water and thus repel gritty, abrasive particles which might cause damage. These bearings can be used as propeller shaft bearings on boats and vessels of all sizes and types. They are available in a complete range of sizes.

Hercules Presents New Marine Diesels

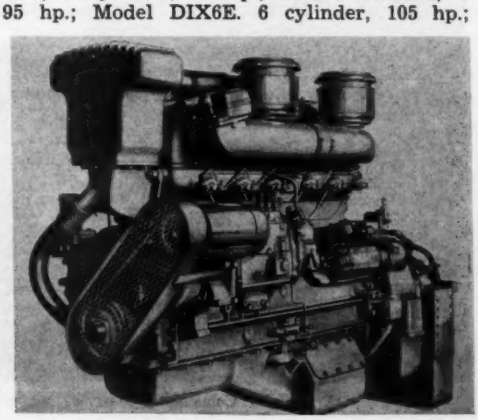
Hercules Motors Corp. is now marketing a line of marine Diesel engines with horsepower ranging from 12-500. The new Hercules engines feature compact size, lightweight design, and are produced for high-speed, heavy-duty service.

Hercules marine Diesels are available with direct drive or reduction gear, dual water pumps, keel-cooling or heat exchanger, supercharged or natural aspiration and hydraulic or manual reverse gears. Standard features include hydraulic reverse gear, direct drive, propeller coupling and sheave-type power take-off. The Hercules marine Diesels operate satisfactorily on either No. 2 or No. 1 fuel oil.

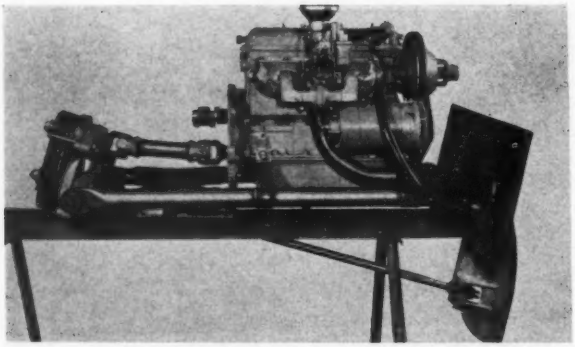
The following models were among those exhibited: Model DIX4E, 4 cylinder, 75 hp.; Model DIX4ES, 4 cylinder, 95 hp.; Model DIX6E. 6 cylinder, 105 hp.;



Left: Fairbanks-Morse Model 38F5¼ opposed-piston Diesel, rated 75 hp. per cylinder, at 1200 rpm.



Right: Model DFXH Hercules Diesel, rated 250 hp. at 2100 rpm.



The Aerojet Marine, 4-cylinder gasoline engine developing 26.5 hp. The engine, its vee-drive, shaft, rudder, rudder mount, steering cable, ammeter and oil pressure gauge are offered as a complete unit.

Model DIX6ES, 6 cylinder, 150 hp. All of the above engines have bore of 3-⅞" and stroke of 4", and develop their rated hp. at 3000 rpm. The 150 hp. Model DIX6ES represents a low weight to horsepower ratio, weighing only 1490 lbs.

Other engines shown were the Model DFXH, 6 cylinder, 5-¾" bore by 6" stroke, 250 hp. at 2100 rpm.; and the Model DNX-V8TS, 8 cylinder-Vee, 6-¼" bore by 6" stroke, 500 hp. at 1800 rpm.

Aerojet-General Has Lightweight Engine

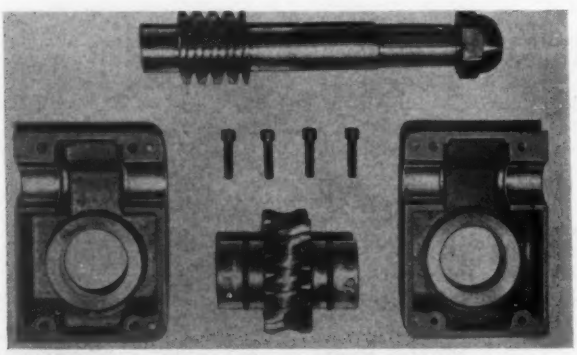
A new lightweight marine engine which is claimed to deliver more power per pound than any other inboard engine in its class is being offered by the Aerojet-General Corp. The engine, known as the Aerojet Marine, is a 26.5 hp. unit, weighing only 160 lbs.

The Aerojet Marine measures only 28" long, 15" wide and 21" high. The engine is a four cylinder, four cycle, water-cooled gasoline unit with overhead camshaft valves and a piston displacement of 44 cubic inches. Its compression ratio is 9:1, using regular gasoline. The fuel consumption of the Aerojet Marine is only 1½ gallons per hour at full throttle.

The engine will be sold in a complete kit known as the "Aerojet Marine Vee-Drive". This unit comprises: the engine; a vee-drive with neutral, forward and reverse, hydraulically controlled; engine mounts; propeller shaft; rudder and rudder mount; and ammeter and an oil pressure gauge. The engine and vee-drive can be throttled down to a speed of 1½ miles an hour.

Columbian Bronze Presents New Worm Steerer

Columbian Bronze Corp. showed its new "Universal" worm steerer, which it is claimed can simplify considerably the worm gear steerer installations of commercial craft with 4 sq. ft. or less of rudder-blade. To be known as Model AE, the "Universal" will replace both Columbian's former Model A for bulkhead mounting, and former Model E for fastening directly to inside of wheelbox or bulkhead.



Component parts of the Columbian "Universal" worm steerer.

On the new model, removal of four bolts and re-setting of the steering-wheel shaft in the other direction is all that is necessary to change the normal A to E. Further, the "Universal" provides a fully suspended worm gear by running the output shaft straight through the steerer, which allows either left or right-hand worm operation, simply by turning the steerer over. The new unit is equipped with special seals against grease leakage, and is fully interchangeable, yet weighs 4 lbs. less than its predecessors.

Columbian also showed working displays of hydraulic controls, steering gears and other mechanical products, including a large range of propeller sizes and styles.

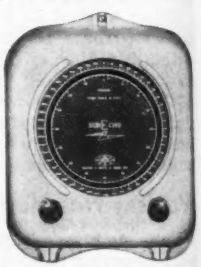
Socony Distributes Tide Calendars

Socony-Vacuum's exhibit highlighted the latest developments in outboard craft and showed the newest outboard gadgets including remote controls and a self-starting engine.

Also featured were the many items available for small craft from more than 35,000 Mobil dealers around the country. Socony-Vacuum's cruising maps and tide calendars were distributed.

Wilfrid White Shows New Depth Sounder

Wilfrid O. White & Sons, Inc. introduced their new 120-fathom Model "C" SurEcho depth sounder. The indicator dial gives a maximum of readability by day or night, and is available with a choice of scales. Echo definition is claimed to be excellent.



Model "C" SurEcho depth sounder.

A new feature is a multi-revolution indicator which tells whether the echo flash is in the first round of operation, or the second, etc. Under normal conditions the transducer performs satisfactorily when mounted in the bilge of the boat, thus saving haul-out expense.

Also exhibited was the new Navy depth sounder. The entire White line of compasses was displayed, from the small Corsair spherical through the Constellation-type spherical with the gimbal ring inside.

International Paint Exhibits "Interlux" Line

The International Paint Co., Inc., exhibited its line of "Interlux" marine finishes and accessories. The International booth included a replica of the Interlux label on a king-sized can, and a number of scale model boats depicting a series of styled color combinations.

"Viny-lux" antifouling paint, which has proven to be most effective, was shown. The hard and smooth drying characteristics of "Viny-lux" allow for additional rubbing or sanding. "Viny-lux" comes in a red that remains permanent in color and may be used on wood as well as on steel bottoms.

Storm-Steering Test in Sperry Display

How it feels to hold a big vessel on course, against a northeast gale in Long Island Sound, was sampled by visitors at the Sperry Gyroscope Co. exhibit. Lights on a huge compass scale showed the wheelsman his wide swings off the attempted course due to the violent forces of a simulated "hurricane" at sea. For comparison with human skill, the visitors switched from manual control to one of the Sperry automatic steering systems.

A robot "Gyro-Pilot", called "Iron Mike", was one of three types of automatic systems featured in the instructive demonstration. A smaller electronic Lever Pilot designed for maneuvering boats in rivers and harbors and a magnetic compass pilot for small boats also were used.

Sperry's display introduced the latest improved radar

antenna for reducing "sea return". This new type scanner has provision for a polarizing device to screen out unwanted and confusing "blips" from the radar scope. Also featured was a working hookup of Loran, a precise electronic position locater.

Red Wing Presents Three New Diesels

Three new Diesels for 1954 were introduced by Red Wing Motor & Manufacturing Co. The firm now can offer builders and operators of small commercial craft a choice of ten gasoline and Diesel engines ranging from 10 to 200 hp.

The new four-cylinder D4 35-45 hp. engine is designed primarily for craft 25 to 35' long. This medium duty engine develops its rated horsepower at 2100 to 2400 rpm., has 144 cubic inch displacement and weighs 850 lbs.

Two new six-cylinder Diesels have been produced for the 30 to 50' class. The D6 80-100 hp. size has 302 cubic inch displacement and weighs about 1500 lbs. Displacement of 426 inches and weight of 1800 lbs. are specifications of the D6 100-145 hp. engine. The three new Diesels are designed for either fresh or salt water operation, as are all other Red Wing engines.

New Evinrude Outboard Has Electric Starter

A new outboard motor, with a built-in electric starter, was introduced by Evinrude Motors. This 25 hp. unit, called the Evinrude Big Twin Electric, has an auto-type push button starter driven by an electric motor.

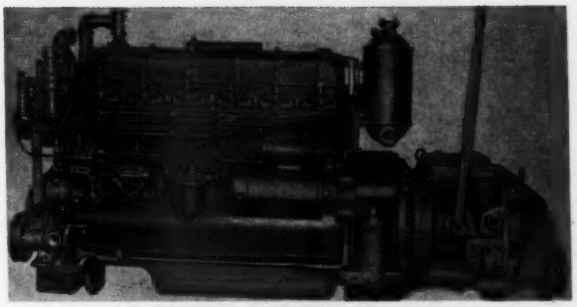
Power for the starter motor is supplied by a standard six-volt automobile battery. A second button actuates an electrically-operated choke for "cold" starts. In addition to its electric starter and choke, the new motor retains the Simplex recoil starter and hand-operated choke used on standard Big Twins. All electrical and mechanical parts are marine-treated throughout.

Other features of the Big Twin Electric include "jack rabbit" acceleration and smooth performance at all speeds from dead slow trolling to 30 miles or more per hour; full gear shift, with forward, neutral and reverse; Twist-Grip synchronized spark and throttle controls in the steering handle; separate six-gallon Cruis-A-Day fuel tank; and built-in mountings for 30-second attachment of remote throttle, gearshift and steering controls.

Other motors in the 1954 line include the new quiet Fleetwin Aquasonic, a 7½ hp. motor; the 15 hp. Super Fastwin; and the lightweight 3 hp. Lightwin. All horsepower ratings are O.B.C. certified at 4000 rpm.

Auto Engine Works Shows "Capitol" Gears

Representative models of the "Capitol" line of hydraulic marine reverse gears manufactured by the Auto Engine Works, Inc. were exhibited. The "Capitol" hydraulic reverse gears range in capacity from 150 hp. at 2000 rpm.



Red Wing D6 80-100 hp. Diesel.

to 600 hp. at 2100 rpm. They are controlled by a finger's touch, and carry their own oil pump, filter, and cooler.

It is claimed that these gears never require adjustment, are 100% reverse, using no toggles, levers, or brake bands, but operate through two multiple disc clutches compressed and released by a single cylinder reciprocating fore and aft. This principle prevents the released clutch from dragging when the other is engaged.

The "Capitol" Model "1E" and "EF" manually-operated gears also were shown, as well as reduction gears capable of providing either rotation of propeller.

International Nickel Features Seagoin' Monel

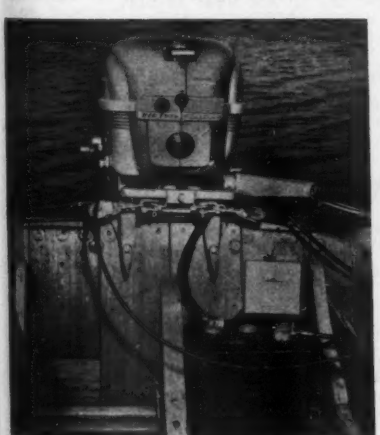
"Seagoin' Monel in Tanks, Shafts and Fastenings" was the theme of The International Nickel Company's display. Items shown included Monel propeller shafts machined with the new 1950 S.A.E. standard filleted keyway, designed to improve the fatigue life of all shafting. Several designs of corrosion-resistant, non-gum forming Monel fuel tanks were displayed.

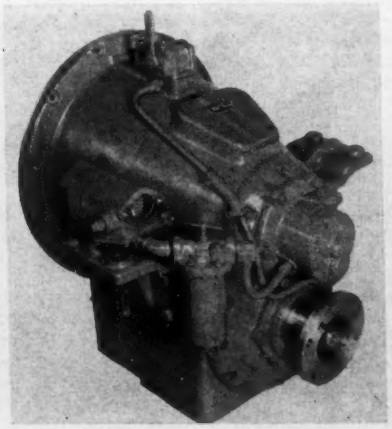
Three sections of different type hull planking were exhibited to illustrate new and stronger methods of construction using Monel Anchorfast nails. An accessories display featured a Monel stove, made by Perkins Marine Lamp and Hardware Corp., a heat- and sea-water resistant marine silencer, made by Maxim Silencer Co., a Wixkuler engine heat exchanger and a "Galley-Maid" hot water heater, products of the Western Blower Co. Also shown were the latest in Monel pumps, pails, fuel lines, tubing, boat pole hooks, mast fittings and boarding ladders.

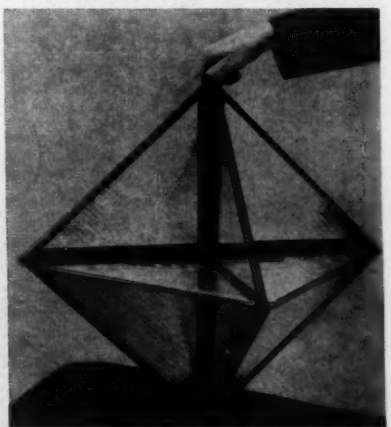
Marine Products Has Radar Reflector

A new 18" radar target is now being marketed by Marine Products, Inc. It is a collapsible 8-sided corner reflector of aluminum foil, laminated to a stiff backing.

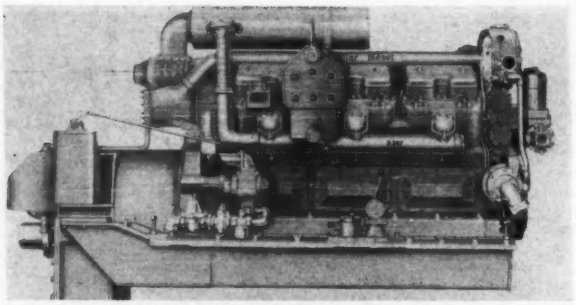
The radar reflector can be attached to any part of the boat and be put into use within a minute. It flattens to







Left: 25 hp. Evinrude Big Twin Electric outboard. A standard automobile battery provides power for the electric starter. Center: "Capitol" Model HYC reverse gear with EC-6900 reduction gear. Capacity is 300 hp. at 2100 rpm. Right: Marine Products radar reflector.



500 hp. Caterpillar D397 marine engine.

approximately ½" by 18" square for easy stowage. The 8-sided construction and radar reflecting material cause a distinct visible blip to appear on a radar screen for a distance up to 8 miles.

Marine Products' liquid rubber Sealer 900 is now "freeze-stable." It can be subjected, in transit or storage, to repeated freezing or thawing without affecting the adhesive quality or flexibility of the product.

Caterpillar Cutaways Show How Diesels Work

Working cutaways of two of the Caterpillar V-type Diesel engines featured the exhibit of Caterpillar Tractor Co. One of the cutaways, that of the 500 hp., D397 marine engine, was in two sections: the complete engine and the fuel injection system. The other working model was that of the 250 hp., D337 engine. Caterpillar also displayed the 300 hp., D375 engine.

A special display board told the story of Caterpillar production and the scope of the company's marine service facilities. The board contained photographs of Caterpillar's new engine factory, engines being made on the production lines and the finished products being used in fishing boats.

Snow-Nabstedt Exhibits Marine Gears

The Snow-Nabstedt Gear Corp., makers of Joes and S-N gears, displayed some of their popular models. These included hydraulically-actuated, manually-operated and air-operated gears, ranging from 4 hp. to 1000 hp.

Also featured in the exhibit was gearing from their large, in-line, planetary reverse-reduction gears which transmit 1000 hp. at 720 rpm. The unit which uses this type of gearing can shift rapidly with less engine wear, and the gearing makes possible increased maneuverability and the adaptation of many, large uni-directional engines for marine propulsion.

Cut-open models showed the working principles of S-N gears. Some of the features of the gears are as follows: simplicity of design with power being transmitted smoothly to the propeller shaft through a double-cone clutch; herringbone reduction gearing of alloy steel, carefully machined and heat-treated; and gears designed for long life and ease of maintenance or service.

Gulf Features Cruisegide Service

The major section of the Gulf Oil Corporation's booth was devoted to the Cruisegide Service. Now being printed bi-annually, the newest series of harbors books contain the latest and most complete information on cruising matters.

The Cruisegide comes in handy pocket size and in five volumes as follows: Harbors of the South; Harbors of Long Island Sound; Harbors of New England; Harbors of the Middle Atlantic States; and Harbors on Inland Lakes and Rivers.

Another major part of the Gulf exhibit this year was the Marine Fuel Section. A gasoline and Diesel fuel pump with micronic filters which remove tiny particles of sand, rust, dirt and other foreign matter, as well as condensed moisture, was featured. A cut-away diagram graphically explained the principle of filtered fuel.

The Gulf booth also included an Outboard Products Section.

Mercury Has New 40 hp. Outboard

Spearheading the '54 line of the Kiekhaefer Corp. is the new Mercury Mark 50, a four-cylinder-in-line, 40-plus horsepower outboard. Its large amount of power makes the Mark 50 well suited to heavy-duty commercial work. Inside or outside steering arrangements are possible with the integrated remote controls. The Mercury Mark 50 weighs only 120 lbs., and shifts into forward, neutral or reverse.

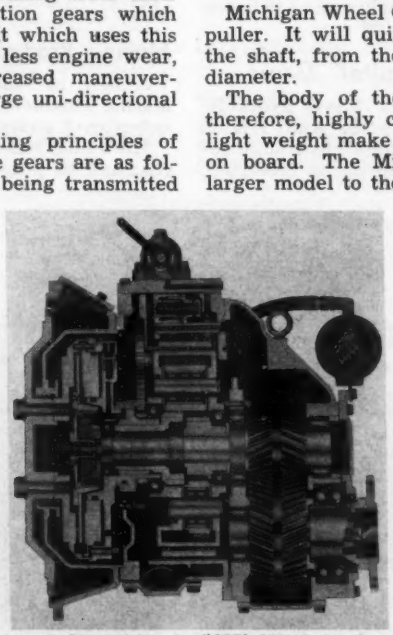
Mercury also is offering three other outboards for 1954 —the Mercury Mark 20, the fishermen's Mark 5, and the Mark 7. The alternate-twin Mercury Mark 20 develops 16 hp. It features small size, light weight (only 72 lbs.), reverse gear, neutral and remote fuel tank. Quick detachable remote control equipment, engineered for the motor, is available.

The Mark 5 is rated 5-plus hp., and features push-button neutral. This motor weighs only 40 lbs. Weight of the 7½ hp. twin Mark 7 is 54 lbs.

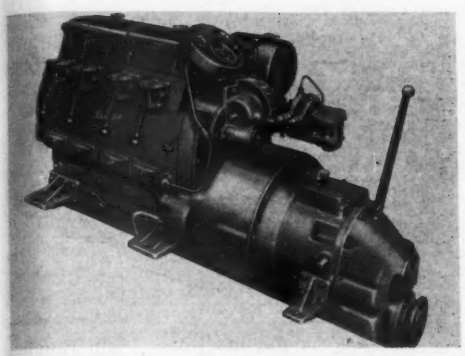
Michigan Wheel Offers Propeller-Puller

Michigan Wheel Co. introduced a small, efficient wheel-puller. It will quickly remove any propeller frozen on the shaft, from the smallest outboard to wheels 20" in diameter.

The body of the puller is of propeller bronze, and therefore, highly corrosion resistant. Its small size and light weight make it a very desirable accessory to have on board. The Michigan Wheel Co. expects to add a larger model to the line in the near future.

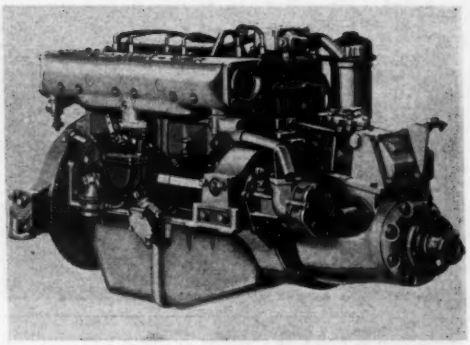


Left: 40 hp. Mercury Mark 50 outboard motor. Center: Snow-Nabstedt #3758-2057 hydraulic gear, which transmits 175 hp. at 1600 rpm. Right: Michigan Wheel Co. propeller-puller.



Left: Lister Model FR-4 marine propulsion Diesel, rated 36 bhp. at 1800 rpm.

Right: Chrysler Ace marine engine, rated 92 hp. at 3200 rpm.



National Supply Shows Diesel Line

The Engine Division of The National Supply Co. presented its line of modern high output, fully-enclosed type Diesels for marine propulsion and auxiliary usé. Included were a 6-cylinder stock model of the 300 hp. Model 35-SX-6, a heavy duty Diesel; the Lister FR-6, a 6-cylinder model rated at 54 hp.; and a cutaway display model of the Lister FR-3 engine, with moving parts, slides, photos, and photomurals.

The Lister engines for propulsion or auxiliary and the Atlas-Superior engines for Diesel electric, direct propulsion or generator drive service, range from 4 to 1765 bhp. The Lister FR series is available in 1, 2, 3, 4 and 6-cylinder models rated from 4 to 54 bhp.

Morse Offers Single Lever Engine Control

The Morse Instrument Co. displayed its new Model MD-36, all-mechanical single lever engine control system, designed especially for the operation of marine Diesel engines from either a remotely-located station in the pilothouse or from the engine room. The new remote control is a two-way cable system for twin engines, operating them independently or together. Sprockets at pilothouse and engine room ends with short lengths of roller chain connecting to the cable ends, provide positive torque transmission throughout the system.

Morse also showed its Model MH-2 single lever engine control for gasoline or small Diesel engines; Type "C" and Type "R" bow lights and Marine Chargicators.

American Brass Features Tobin Bronze Shafts

The American Brass Co. showed Tobin Bronze propeller shafting in graduated sizes up to 5" in diameter. There also was a montage of pictures of recently-built boats powered through Tobin Bronze shafts, and a working demonstration of a Tobin Bronze shaft.

Tempaloy, another Anaconda shafting alloy which was developed to meet the needs of high-speed heavy-duty work, was shown. Everdur, the original copper-silicon alloy group, was displayed in the form of deck and hull fastenings; mast, spar and deck fittings; turnbuckles and other marine hardware where high strength and corrosion resistance are required properties.

Pettit Offers New Booklet on Painting

"The Finishing Touch" is the title of a comprehensive pictorial manual distributed by the Pettit Paint Co. The firm also introduced a new hull and deck paint color known as Newport Green.

The Pettit pictorial manual is a 15-chapter, 48-page booklet covering removal of paint and varnish, surface repairs, sanding methods, seam preparation, technique of painting, deck and hull painting, selection of colors, recanvassing of decks and cabin tops, selection of bottom paints, preparation of metal surfaces, how to use wood fillers, and how to patch indentation and surface abrasions. The booklet can be purchased through Pettit dealers.

Chrysler Exhibits V-Imperial Special

Highlighting the Chrysler marine engine exhibit was the new Marine V-Imperial Special. Based on the ratio of power to weight, this 200 hp. at 3800 rpm. power plant is one of the world's most powerful eight-cylinder marine engines.

The new Chrysler V-8 engine uses standard 22½" wide centers and is engineered to fit into any hull capable of taking an inboard six or eight-cylinder marine engine. It has bore of 3-13/16"; stroke of 3⅝"; and displacement of 331.1 cubic inches.

Chrysler also displayed five basic six-cylinder engines, including the Ace, rated 92 hp. at 3200 rpm; Crown, 115 hp. at 3200 rpm; Ace Special, 105 hp. at 3600 rpm; Crown Special, 125 hp. at 3600 rpm.; and the Majestic, 160 hp. at 3000 rpm.

Reduction gears for the entire Chrysler line are internal gear and pinion type with helical teeth. Reductions of 1.5, 2, 2.5, 3 or 4 to 1 are available. Vee-drive is available in 1.13, 1.5 or 2 to 1 reduction. Reduction gears can be supplied to fit practically any type hull, with four different mounting positions.

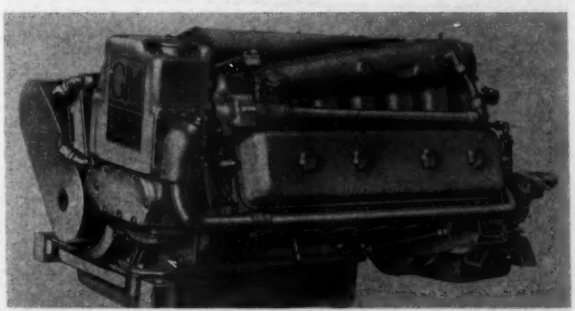
Chrysler builds a waterproofed electrical system into all its marine engines. Hydraulic controls for safer, smoother, and generally easier gear shifting continue as an optional feature of the Chrysler line.

Detroit Diesel Presents New Inclined Engine

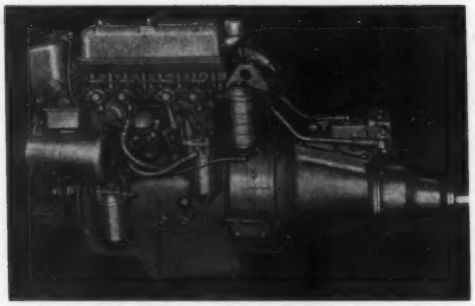
The Detroit Diesel Engine Division of General Motors Corp. displayed a new inclined six-cylinder engine of the "71" series and a new 12-cylinder tandem-twin unit of the "110" series. With these new engines, the Division has a varied line of Diesels ranging from 54 to 864 hp.

The new inclined six, like its companion the inclined four-cylinder "71", has block and head tipped on its side to attain an overall height of less than 33". The engine is rated 216 hp., and a weight of only 10.5 lbs. per horsepower has been attained by extensive use of aluminum alloys.

The new tandem-twin unit consists of two of Detroit Diesel's 6-110 marine engines mounted end-to-end to drive a single propeller shaft. The unit produces 409 continuous shp. for work boats, is 68" in height and

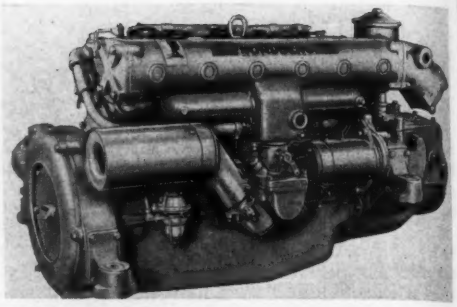


General Motors "6-71" inclined engine delivering 146 continuous shp. at 1800 rpm.



Left: Gray's lightweight Diesel Four-D181, rated 50 hp. at 2400 rpm.

Right: New, more powerful Nordberg Knight "One-Fifty-Five", now rated 155 hp.



weighs less than 21 lbs. per horsepower, including its gear box and structural steel base.

A four-cylinder valveless marine Diesel of the "51" series for work boats of 24' and up in length was shown. The weight of this engine formerly was 1400 lbs., but now is almost 10 per cent less due to a new and lighter flywheel and flywheel housing. Also on display was a new motorized cutaway model of the three-cylinder Series "71" engine.

Gray Introduces New Lightweight Diesel

The Gray Marine Motor Co., division of Continental Motors Corp., lists for 1954 a total of 5 Diesel engines and also a wide range of gasoline engines in 9 basic sizes. For maximum economy and best idling, Gray offers the heavy duty "Lugger Series" of engines with low compression and "hot" manifold. These operate at top speeds of 1800-2400 rpm. For applications where higher output is wanted, Gray has the "Express Series" (3000-3200 rpm.).

Of particular interest to workboat operators is a new four-cylinder 50 hp. Diesel weighing only 750 lbs., including reduction gear. This is a companion engine to the six-cylinder Diesel used by the U. S. Navy which has a weight of 1500 lbs. and a continuous output rating of 100 hp. at 2200 rpm. Both engines are fresh-water cooled. The 100 hp. Diesel has a new single plunger Bosch injection pump which requires no checking of lubricating oil level and no periodic refilling, because it is connected on the engine's oil pressure system for continuous flow.

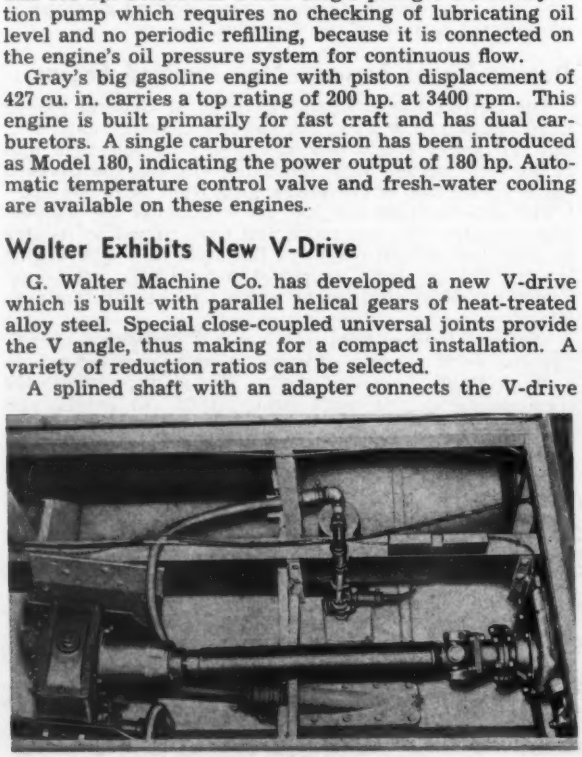
Gray's big gasoline engine with piston displacement of 427 cu. in. carries a top rating of 200 hp. at 3400 rpm. This engine is built primarily for fast craft and has dual carburetors. A single carburetor version has been introduced as Model 180, indicating the power output of 180 hp. Automatic temperature control valve and fresh-water cooling are available on these engines.

Walter Exhibits New V-Drive

G. Walter Machine Co. has developed a new V-drive which is built with parallel helical gears of heat-treated alloy steel. Special close-coupled universal joints provide the V angle, thus making for a compact installation. A variety of reduction ratios can be selected.

A splined shaft with an adapter connects the V-drive with the engine flange. A flexible roller chain coupling is used for short connections, while special tubular shafts are furnished for longer ones. Heavy anti-friction bearings to withstand propeller thrust are built within the unit, and watercooling is provided to assure continuous operation at high speeds.

Standard units are supplied with a 15° V angle, but special angles can be obtained. The V-drives can be furnished with an idler to change rotation of the propeller shaft, making it possible to obtain twin screw rotation with same hand engines.



An installation of the Walter V-Drive.

Nordberg Knight Has Higher Horsepower

The new Nordberg Knight "One-Fifty-Five" was the center of attraction at the Nordberg Manufacturing Company's exhibit. With a considerable amount of power held in reserve, the Knight's new higher rating of 155 hp. is achieved at a conservative, economical engine rpm. The Knight develops its new horsepower with standard accessories, single carburetion and on regular automotive grades of gasoline.

Also displayed were five other Nordberg gasoline marine engine models: the 130 hp. Tarpon, 110 hp. Marlin, 110 hp. Bullet, 95 hp. Arrow, and 95 hp. Bluefin.

Two Nordberg Diesel auxiliary engines were shown. Especially highlighted in this category was a "combination unit" designed and built exclusively by Nap. J. Hudon, Boston, Mass. distributor of Nordberg 4FS engines and Nordberg gasoline marine engines. This piece of auxiliary equipment is built around a one, two or three cylinder Nordberg 4FS engine which usually drives a generator, pump, compressor and power take-offs to drive other equipment. Nordberg 4FS engines range from 10 to 45 hp.

Ferdinand Exhibits New Sealing Compound

The L. W. Ferdinand Co. introduced their new Ferdiseal No. 21, which was featured among three other new products and their general line of marine glues and sealing compounds.

Ferdiseal No. 21 is very light in color and will take paint in 6 hours. It has a greater adhesion and is considerably more flexible than the Ferdiseal No. 20 and will remain unaffected by water, sun, heat or cold indefinitely. Like Ferdiseal No. 20, it is specifically designed for stopping leaks in narrow seams, cracks and crevices.

The sealer comes in a handy new Polyethylene squeeze bottle, with a special applicator cap.

Onan Features Marine Generating Plants

Three models of marine electric generating plants were shown by D. W. Onan & Sons Inc. Two were gasoline-driven models, 1,000 and 1,500 watts, while the third was a 3,000-watt Diesel-driven generating plant.

The Diesel unit, Model 3MDSP, is a water-cooled, single-cylinder generator set that will operate efficiently on any type of Diesel fuel. Both the full Diesel engine and the direct-connected generator are completely Onan-built, incorporating many safety features.

Model 3MDSP is compact (30½" L., 21-⅝" W., 29-

¾" H.), and easily can be installed on any type work boat. It will provide power for searchlights, blowers and appliances, radio and ship-to-shore communication equipment, water and fire pumps, signal systems, winches and general lighting. The 3,000-watt unit can be supplied in both alternating current and battery charging models.

Radiomarine Presents Fischlupe Depth Sounder

The Radiomarine Corporation of America introduced the Fischlupe, its new electronic fish-finder which measures depth and display echoes downward through the water on the same basic principle that a radar scope measures distance through the air.

Radiomarine's new Echograph is an 8-range recording depth sounder which operates on the same basic echo sounding principles as the Fischlupe, and can be installed as an independent unit or as a supplement to the Fischlupe. The size and depth of fish shoals, plankton, rocks and wrecks under a vessel are shown on a dry recording paper.

The compact Model ET-8044, 50-watt ship-to-shore radiotelephone combines a 4-channel, crystal-controlled telephone and a high-fidelity entertainment receiver for the standard broadcast band. A versatile, compact 30-watt two-way radiotelephone for medium-sized boats is the Model ET-8037, which combines in a single cabinet a 6-channel crystal-controlled receiver and an 8-tube receiver with a built-in speaker and integral power supply. The ET-8050 radiotelephone transmitter-receiver is designed primarily for coastal operation and features 11 crystal-controlled channels.

Especially developed for small-craft use, the Model AR-8711 radio direction finder is combined with a 3-band receiver. Radiomarine's Model CR-103 small craft radar has the power and sensitivity to pick up objects as close as 75 yards and as distant as 20 miles.

Surrette Displays Automatic Shore Converter

The Surrette Storage Battery Co., Inc. exhibited an automatic marine shore converter which permits pulling into a dock and remaining overnight without fear of running down the batteries. The converter features compact design, and a simple two-wire hookup simplifies installation.

The device is adjustable to compensate for either high or low shore voltage. A built-in A.C. Voltmeter indicates voltage of the shore line at a glance. Output in excess of converter requirements can be used safely over short periods, forcing the batteries to carry peak loads. The batteries automatically float on the line when no load is required.

Dual voltage is available for maintaining starting batteries separate from main batteries. The converter is obtainable for 12, 24, 32 and 110 volt systems, and D. C. Voltmeter and D. C. Ammeter are available on all SCA models. Protection against overloads is furnished by fuses in the D.C. circuit and circuit breakers in the A.C. circuit.

Sudbury Unit Keeps Sand Out of Cooling Water

Sudbury Sure-Flow Unit.

Sudbury Laboratory has designed the Sudbury Sure-Flow Unit for keeping sand, silt and foreign matter out of the cooling system of marine engines. Made of clear lucite, the device takes the foreign matter out of the water in four different places. Three times the velocity of the water is materially reduced so that all heavy material is dropped out. There is also a vertical brass screen through which all of the water must pass.

The new Model XL Sudbury Aqua-Clear Feeder can be installed with inlet and outlet at the bottom, or inlet at the bottom and outlet at the top. It can be put on in any position from vertical to horizontal. The protective film developed by the feeder to stop rust and corrosion in the water jacket, manifold, etc., also materially helps to control destruction by electrolysis.

Whenever engine temperature goes over 200 degrees, or oil pressure drops to under 7 lbs., the Sudbury Automatic Engine Alarm gives a combined audible (buzzer) signal and visual (flashing red light) signal to forewarn the operator that something is wrong. Possible damage, such as a cracked block, thus can be avoided.

The new Sudbury Sky-Vents and Port-Vents are designed to allow light and fresh air to enter the cabin of a boat without any water getting in. The Sky-Vent is a rugged dome, molded of laminations of tough fibreglass, while the Port-Vent is completely constructed of heavyweight, clear lucite.

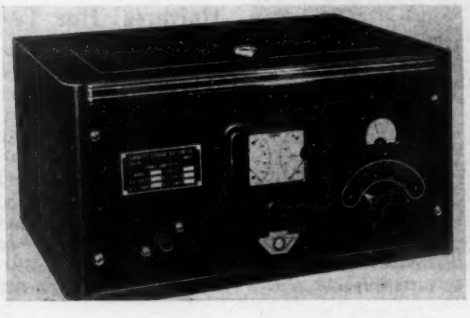
Bludworth Shows Radar for Fishing Craft

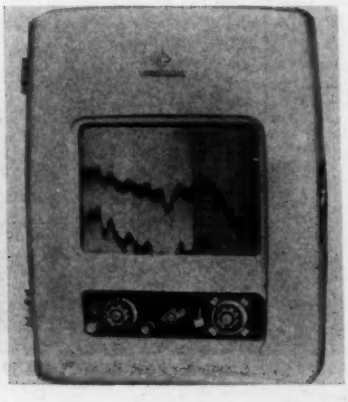
Radar for fishing vessels, now available through Bludworth Marine, was displayed for the first time. The new model 159B radar, including tripod mast and dual radar scannar, is manufactured by Decca. Sales and service of this small size unit are handled by Bludworth Marine throughout the United States.

The DF-30A self-contained Port Pilot direction finder was exhibited. DF-1029A and DF-1030B three-band direction finders featuring the exclusive "Nuldikator" type of meter presentation were shown and demonstrated. Also displayed was the DF-1028, the Bludworth Marine Standard-Six direction finder, an instrument especially designed for long-range bearings on smaller craft.

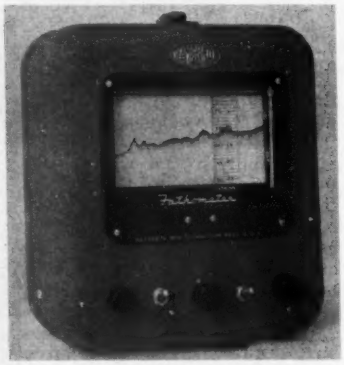
Bludworth's ES-121A Depthometer with remote repeater also is available. The Depthometer makes it possible to take direct readings in sunlight, and the repeater can be placed anywhere in the boat.

Left: Bludworth Port Pilot direction finder.
Right: Radiomarine's Echograph recording depth sounder.
Below: Surrette automatic shore converter.





Raytheon Has "Fathometer Cadet" Recorder



Model DE-112 Raytheon "Fathometer."

Raytheon Manufacturing Co. featured its new model DE-112 "Fathometer Cadet" depth recorder. The large blank chart paper on this recorder provides more space for stylus markings and thus shows depth variations in much detail. Even the smallest tracings indicating small fish schools are clearly distinguishable. The Submarine Signal "Fathometer" line of echo depth sounders also was shown, including four types of indicators and three types of recorders.

A complete line of marine radiotelephones was featured, including a new portable emergency radiotelephone that can be used where lack of battery power precludes permanent installations. Completely self-contained, this radiotelephone reaches near-by ships and shore stations.

The new Raytheon "Navigator" portable radio direction finder offers a "phantom loop" antenna, which does away completely with the large loops formerly required. The two-band receiver covers the standard broadcast band and the marine radiotelephone band, and operates from its own self-contained battery pack.

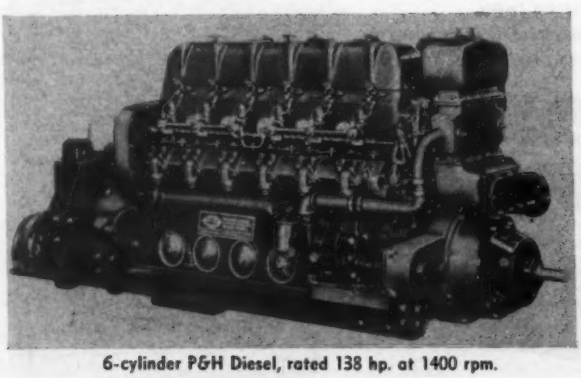
Raytheon's new Model 1500 "Mariners Pathfinder" radar consists of only two units, the antenna-transmitter and the indicator-receiver, and can be installed in limited space. Ideal for fishing vessels, it has all the features of "big ship" radar, with parallel cursor and the Raytheon reflection plotter that enables the navigator to plot the course and speed of all ships within danger range directly on the changing picture of the radar scope.

Harnischfeger Has Lightweight P&H Diesels

The 1954 line of P&H marine Diesels, manufactured by Harnischfeger Corp., offers complete coverage for the powering of boats up to 60'. There are 2, 3, 4 and 6-cylinder models with piston displacement up to 525 cubic inches.

Because of advanced design, P&H marine Diesels have unusual power output for their size and weight. Their over-all compactness and lower total weight are achieved through the use of modern, lightweight alloy metals.

P&H marine Diesels are 2-cycle, which means there is power in every down stroke of the piston. All models have 4.5" bore and 5.5" stroke. Water jackets are full length, providing effective temperature control around and below the inlet port area. P&H also offers a complete line of Diesel electric generating plants.



6-cylinder P&H Diesel, rated 138 hp. at 1400 rpm.

Twin Disc Hydro-Troll Drive Displayed

The Twin Disc Hydro-Troll marine drive was displayed on a 6-cylinder P&H Diesel. This compact drive incorporates a fluid coupling with variable fill, designed as an integral unit with either the Twin Disc MGHV-220 (for 80-230 hp.) or MGHV-340 (for 150-340 hp.) fluid coupling marine gears. By adjusting a control valve, the operator can increase "slip" between the impeller (which is connected to the engine flywheel) and the runner (connected to the marine gear) from a normal 3% to a maximum of 60% on the MGHV-340, or 40% on the MGHV-220.

This increased slip in effect multiplies the mechanical gear reduction to the propeller by as much as 2½ times. As a result, sustained slow, steady speed is obtained with the engine operating within its efficient rpm. range.

Palmer Offers Two New Gasoline Engines

The Palmer Engine Co. exhibited two new gasoline engines and a completely redesigned version of the 145 hp. Mariner Diesel engine, based upon the Mack Truck Diesel. Palmer's new PH-135 is rated 135 hp., while its new PH-150 develops 150 hp., and has all the heavy service features of the other Palmer Huskie engines.

The Palmer Huskie Series begins with the PH-45, which is rated 48 hp. Eighty horsepower are developed by the Palmer PH-75. This engine is a durable type of high speed power plant, using the same all-disc Palmer built reverse gear which is on the three larger sizes of Palmer engines. As a result of the oversize reverse gear, this engine is well suited to marine occupations where a great deal of maneuvering is necessary, such as in lobster fishing.

The PH-120 develops 125 hp. As is the case with all other Palmer Huskie series, this engine can be had with 7.5:1 compression ratio as standard equipment, or without extra cost, a low compression head can be put on the engine for heavy duty lugging purposes.

Kermath Hydrojet Eliminates Rudder

The major addition to the 1954 line of engines produced by the Kermath Manufacturing Co. is the Hanley-Kermath Model 60 Hydrojet unit which was brought out last year and subjected to exhaustive laboratory and field tests throughout 1953. This propulsion unit does away with propeller, drive shaft, clutch and reverse gear, stuffing boxes and bearings and even the rudder.

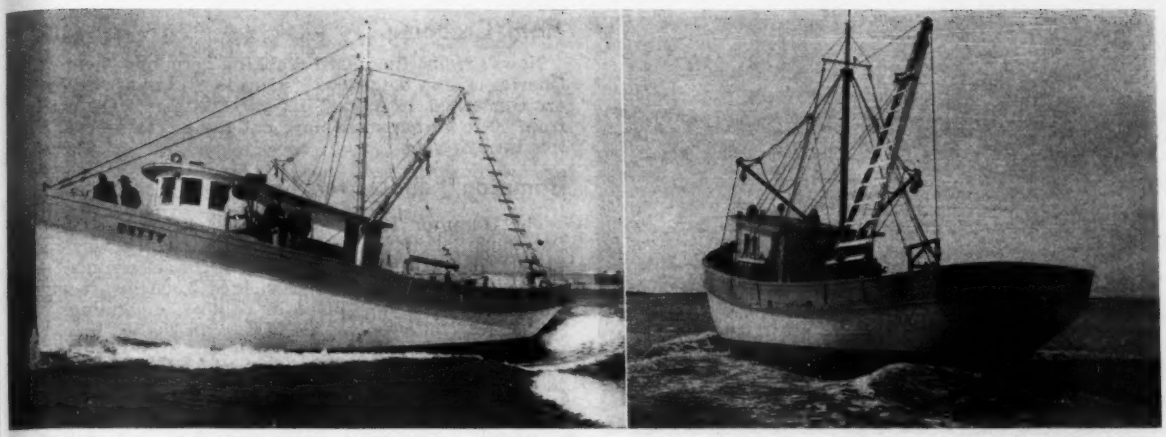
The Kermath gasoline line-up contains improved models of the 5 hp. single cylinder Sea Pup and the 10 hp., two-cylinder Sea Twin, now coming out with better reduction gears and magnetos. Other engines are the compact, 300-pound Sea Cub four-cylinder; the 134-cubic inch piston displacement Sea Jeep designed for 61 hp. at 3600 rpm.; the 230 cubic inch Sea Prince, a small six which provides up to 100 hp. at 3600 rpm., and the larger, more powerful Sea Rovers, Sea Mates, Sea Farers and Sea Raiders.

There are five Diesels in the Kermath line ranging from small, two-cylinder machines developing 27 hp. up to a big six developing from 190 to 250 hp. for heavy duty commercial use.

Universal Has Two New Sixes

Two new high-power sixes have been added to the Universal Motor Co. line, entirely new engines designed to meet the requirements of today's faster hulls and better space utilization. The Explorer Six is of 230 cubic inches piston displacement, develops 95 hp. at 3200 rpm., weighs 684 lbs. and is only 40⅝ inches long.

Its companion newcomer, the Master Six, has a piston displacement of 237 cubic inches and delivers 105 hp. at 3200 rpm. For reduced load per bearing and better high-speed operation the engine has seven main bearings on the crankshaft, fully counterweighted. The motor is 40⅝ inches long and 23⅝ inches high.



Two trial run views of the 68-foot "Betty", first of the new Hatteras-type shrimp trawlers being built by Morehead City Yacht Basin, Inc., Morehead City, N. C. She is owned by Capt. Bernard Smith of Brownsville, Tex., and powered by a 6-110 General Motors Diesel.

Shrimp Trawler "Betty" Built For Campeche Weather

The first of the new Hatteras-type shrimp trawlers being built by Morehead City Yacht Basin, Inc., Morehead City, N. C., sailed on her maiden trip early this month. She is the 68' x 19' x 7' *Betty*, owned by Capt. Bernard Smith of Brownsville, Texas, and left for Campeche Bank after being fueled and iced at Miami, Fla.

The yard's second trawler, constructed for Donald Kruger and Carl T. Combs of Fort Myers Beach, Fla. was scheduled for delivery this month. She is powered by a D13000, 120 hp. Caterpillar Diesel, and will carry 5300 gals. of fuel. A third vessel, to be equipped with a Series 6-110 General Motors 205 hp. Diesel, is being completed for Capt. Charles Anderson of Port Isabel, Texas. The yard plans to build two trawlers per month.

The new trawler *Betty* is expected to make a very able and seaworthy addition to the Brownsville fleet. Running light with only partially filled fuel tanks and no water, she did 11 knots on her trial trip. Her performance even exceeded the expectations of her designer and construction consultant, Capt. Jim Mitchell, who has been associated with the Morehead City yard for 10 years and who previously operated shrimp boats out of Morehead and Fernandina, Fla.

Designed especially for sea conditions encountered on Campeche, the Hatteras trawler has plenty of bearing aft, which should allow sufficient lift to comfortably ride out the chops and following seas which are prevalent in that area. At 10 knots, the trawler made very little swell. The fullness of her hull is carried well aft, and the slightly raked transom is exceptionally wide, being only a foot less than the beam. The vessel has a deep hull, which provides ample freeboard and 7'10" headroom in the hold.

Propulsion power for the *Betty* is supplied by a Series 6-110 General Motors 205 hp. Diesel with 4.5:1 reduction and reverse gear, swinging a 4-blade, 52 x 40 Columbian propeller. Propeller shafting is Tobin bronze on the outboard section and steel inside, and a Goodrich Cutless stern bearing is used. There are two 1¼" Jabsco belt-driven pumps with clutches, and a power-driven 1½ x 1½ bilge pump; and the engine room has two 6" ventilators.

The vessel is equipped with Surrette 32-volt batteries, 3 kw. Onan Diesel generating set, 50-watt Apelco ship-to-shore telephone, Kaar direction finder, Raytheon Submarine Signal Fathometer, 5" Wilfrid O. White compass, One-Mile-Ray searchlight and Danforth anchor.

The *Betty* has a Stroudsburg hoist which carries two 900' lengths of 7/16" Bethlehem wire towing cable and 600' of ⅜" try net cable. The mast is of 8" steel pipe and the main boom is 6" steel pipe. There are two 14' outrigger booms, one 3" diameter, the other 4"; four 4" deck plates and three 16" deck plates.

Construction specifications of the Hatteras-type shrimp trawler show 10" x 12" heart pine keel, 2½ x 4 white oak frames steam bent on 12" centers, 2" pine decking, 1⅝" cypress and fir planking, 4 x 5 pine deck beams, 3 x 10 floor timbers, 2 x 6 pine ceiling, and 4 sets of 2 x 6 through-bolted clamps. The transom is oak framed and double planked with cypress and pine. Fastenings for keel, stem, shaft log and horn timber are galvanized bolts and rods, while the stringers and deck beams have ½" carriage bolts.

The deck house, which is 22' long and 8' wide, is built of cypress with pine studding, and finished with plyboard and cypress ceiling. It has 12 windows and 5 doors. The galley has a Monel sink and 4-burner gas stove. The hull is treated with Cuprinol preservative, and the vessel is painted with Woolsey paints.

There are 4 fuel tanks, each of 1000-gallon capacity, and two 300-gallon fresh water tanks. The hold will carry 40 tons of ice.

North Carolina Oyster Beds Damaged by Hurricane

Not since 1948 have North Carolina oyster beds been as severely damaged as they were by the hurricane "Barbara", according to Dr. A. F. Chestnut.

Dr. Chestnut said that the first examination of the beds showed a considerable number of market-size oysters had been killed. Others were in a weakened condition.

The percentage of dead oysters of market size ranged from 5 in Swan Quarter Narrows between the island and mainland to 50 per cent in Rose Bay. The death rate of oysters under market size ran as high as 25 per cent.

The shellfish specialist reported that Deep Cove, Hyde County, was opened to oystermen on December 7, after being closed three years. The state planted shells there in 1950 and then prohibited oystering to allow young oysters time to grow.

Oyster Output 1000 Bushels Daily

The daily output of oysters from the harbor of Stumpy Point was estimated at about 1,000 bushels or more during the 30-day period ending early last month. Most of the oysters caught in nearby waters were small in size, but had the fine flavor known as Crab Slough oysters.

More than 30 small boats from Pamlico County, principally Lowlands, operated out of Stumpy Point, although some ten or 12 local citizens were engaged in the business. Catches per boat ran from 20 to 75 bushels and as many as 1,800 bushels were shipped in a day.

The 43' "June Lee" of Cobbs Creek, Va., which goes oystering and takes out fishing parties. Her owner is James W. Callis of Cobbs Creek, and she is powered with a 130 hp. Chris-Craft gasoline engine which swings Hyde propeller. Gulf lubricating oil is used.

Virginia Reopens Deepwater Area to Oyster Dredging

Commissioner of Fisheries Charles M. Lankford, Jr. on December 12 announced that effective the 14th the Commission would reopen the Chesapeake Bay between the Northern Neck and Tangier Island to deepwater oyster dredging.

The season, which normally runs through the months of December and January, will end as usual on February 1. Lankford said that the area would be carefully patrolled by State oyster inspectors during the season.

After having allowed oyster dredging in the approximately 150 square miles of bay bottom exceeding 30 feet in depth since 1942, the Commission this year had not automatically reopened the season.

Oyster Rock Now Open for Dredging

The Hurley Oyster Rock, a large bed of oysters just below the Virginia-Maryland line, is now open for dredging. The Virginia Board of Fisheries opened it on December 12.

Last month oysters brought high prices. They started at $3.00 a bushel, then fell to $2.75, but late in the month were bringing $4.75 in the Crisfield markets.

Northumberland Watermen Organize

Watermen in a meeting at Heathsville last month organized the Northumberland Watermen's Assoc. The stated objectives of the new organization are to strive, by cooperative effort, to head off depletion of the seafood industry.

Officers elected were John M. Walker, Sunnybank, chairman; John W. Booth, Lewisetta, vice-chairman; and Alton Dunaway, Bundicks, secretary-treasurer.

Tankers not to Be Anchored in River

The application of George T. McClellan of Arlington for permission to anchor ships in the Rappahannock River has been withdrawn, according to information received last month. It was stated that McClellan has found a location for the boats in the James River.

Middle Atlantic Crab Packers Meet

Leading Middle Atlantic crab meat packers attended an industry-wide meeting at the Chamberlin Hotel, Old Point Comfort, Va., last month. The packers unanimously adopted a resolution authorizing the National Fisheries Institute to represent them in a program now being developed to improve marketing conditions.

Hard Crabbing

News from the hard-crabbing grounds near Cape Charles, Va. is both good and bad. So far as the catches are concerned, it is good, for the dredgers were catching from 50 to 75 barrels a day; but the prices are very low this time of year.

Hampton Roads Area Landings

The Hampton Roads area fish catch for the month of December amounted to 1,433,900 lbs., which was nearly 400,000 lbs. less than production for December, 1952. Pound nets and haul seines yielded 3,300 lbs. of striped bass. Scup took first place in volume of landings, with 851,200 lbs., followed by sea bass, with 288,500 lbs.

Gloucester Benefits Greatly By Popularity of Fish Sticks

There are at present 490 people employed in the manufacture of fish sticks at Gorton-Pew, North Atlantic, Mariners, Cape Ann and General Foods. These people are working on a 12-month basis, which means that Gloucester for the first time in its history is breaking away from a seasonal seven-month industry. So far the firms making fish sticks have been unable to keep up with the demand for them, and Mariners and Gorton-Pew already are making plans for expanding their facilities.

Walter Zink, who is in charge of meat and fish for the A & P in New England, spoke of the public's acceptance of fish sticks as phenomenal. He stated further that fish sticks were now the fastest selling fried item that A & P carries, and that they have become popular quicker than any other frozen item, including frozen fruit juices.

Mackerel Boats Change to Herring Seining

Four of the small shore draggers and some of the bigger mackerel seiners have switched over recently to herring seining. More are expected to go into herring seining soon.

The *Lone Ranger* was the first to go herring seining this Fall. She has been followed by the dragger *Salvatore, Eddie and Lulu M.*, and *Carl Lansen*. The bigger mackerel seiners *Rose Marie* and *Rosie and Gracie* are in the game, too.

Renew Request for Fisheries School

A two-part program to invigorate the Gloucester fisheries industry would be launched under proposals filed with the clerk of the Senate on December 1 by Katherine E. Maloney of Essex.

The bills call for the establishment of a special commission to study methods of revitalizing the industry and the creation of a fisheries school and a fisheries research agency in Gloucester under the jurisdiction of the University of Massachusetts.

The proposal for a special commission will be referred to the legislative committee on conservation for a public hearing and the fisheries school bill will be heard by the legislative committee on education.

Capt. William F. Morrissey

The recent death of Capt. William F. Morrissey marks the passing of another Gloucester skipper famous during the days of sail. Capt. "Billy", as he was best known, passed away at the age of 74.

A native of Pubnico, N. S., he was the last of a famous family of fishing skippers. His father, Capt. William E. Morrissey, was a well known Gloucester skipper of the 1880's and 90's. Capts. Fred, David and Del Morrissey were his uncles, and Capts. Clayton and Howard Morrissey, his brothers. All were tops in the salt cod fishery.

Capt. Billy's most noted commands were the schooners *Blanche* and *Premier* from the F. L. Davis firm.

Louisiana Shrimp and Crab Catches Show Big Increase

During the first ten months of 1953 the Morgan City, Berwick, Patterson and Delcambre area produced approximately 25,526 barrels of shrimp compared with 22,491 barrels for the same period last year.

Hard crabs reported by the Morgan City, Berwick, Patterson, Delcambre, Houma, Dulac and Chauvin area amounted to 3,346,620 lbs., which is almost double the production for the first ten months of 1952. This same area produced 420,203 lbs. of crabmeat January through October this year, as compared with 174,310 lbs. for the same period in 1952.

"Oregon" on New Cruise

According to an announcement December 1, the Fish & Wildlife Service exploratory vessel *Oregon* was scheduled to work in the northeastern Gulf of Mexico with particular emphasis on the area along the continental slope from off Mobile Bay to Cape San Blas from December 3 to December 18.

Work will continue on live bait fishing for blackfin and yellowfin tuna and for white skipjack, and exploration and experimental fishing for tuna bait species using the trap lift net. Also, exploratory drags with 40-ft. trawls will be made to increase seasonal coverage for this area. Several deep water trawl drags will be made in an effort to "chum up" subsurface tuna schools.

Catch Undersize Shrimp

Houma shrimp fishermen last month protested the arrest of some of their number for catching undersize shrimp. They said they couldn't find larger shrimp this time of year.

Some shrimp caught were reported to be as small as 137 to the pound, whereas the legal limit is 68 or less to the pound. It was pointed out that the small shrimp are known as Winter shrimp and that soon they will be gone to new waters.

Shrimp Festival Assoc. Urges Cooperation

The Louisiana Shrimp Festival and Fair Association, Inc. recently mailed a letter to organizations throughout the twin cities of Morgan City and Berwick, urging their cooperation and interest in the annual Festival and Fleet Blessing.

Although the general public has always been invited to take an active interest in the staging of the Shrimp Festival and Blessing of the Fleet, only a comparatively few individuals and organizations have responded.

The Fleet Blessing and the Water Parade, which exhibits the fleet of deep sea shrimp trawlers and workboats harbored in the area, are excellent publicity for the fishing industry and allied businesses.

Mt. Pleasant Sea Food Co., Mt. Pleasant, S. C., owns the shrimp boat "Peggy Ann" operating out of Charleston. A Caterpillar Diesel D318 marine engine provides propulsion power for this 51' x 14' x 4' craft.

Capt. John Eldridge's 42' x 15' "Lina Bell" of Gulfport, Miss. This all-round workboat goes shrimping, fishing and oystering, and her power plant is a 165 hp. General Motors Diesel.

Two Shrimpers Being Built

Marine Construction Co. of Morgan City, headed by J. M. Dilsaver, has a new shrimp trawler for Emory Pacetti near completion. The yard has laid the keel for a 70' all-steel trawler for Theron Boynt of Brownsville, Texas.

Shrimp Pack Shows Gain

Southern shrimp packers were unable to build up much of an inventory even though their pack between August 1 and December 12 ran 15% larger than the previous season.

Frozen shrimp holdings on December 1 were 26,400,000 lbs., 61% more than the 16,400,000 in store on that date the year before. U. S. imports from Mexico, mostly fresh and frozen, amounted to 20,500,000 lbs. for the first nine months of 1953, against 22,900,000.

Mississippi Canning Firm Being Expanded

Construction was begun last month on an expansion of the Bluff Creek Canning Co. at Van Cleave, Miss., which will permit the plant to produce 48,000 cans of Red Heart cat food daily. The operations will require about 40 workers with six boats and additional men engaged in catching fish for the plant.

Alabama Shrimper Gets Radar

The shrimp trawler *Tornado*, owned and operated by Tony Wallace of Gulf Shores, Ala., has been equipped with a Type 159B Decca marine radar unit. It is reported to be one of the first radar installations in a shrimp boat on the Alabama coast.

South Carolina Crab Fishermen Warned About Size of Nets

Trawlers for crabs were warned last month against using nets with bags of less than five-inch mesh. Alonzo B. Seabrook, State Director of Commercial Fisheries, said such nets must conform to law even after shrinkage.

The law, passed by the 1953 General Assembly, permits trawling for crabs within the three-mile limit and within sounds and bays during December, January, February and March. Trawling boats are required to obtain licenses which are valid for shrimp and crab trawling.

Maine Seafood Industry To Be Promoted by TV

As part of an extensive program to promote Maine seafood products and their preparation, the Dept. of Sea & Shore Fisheries is planning to construct a studio for the filming of TV shows at the fisheries station at McKown Point.

According to Leroy M. McCluskey of Warren, who is marine exhibits superintendent, the department plans to have its first 15-minute TV film completed sometime this month.

Elaborate equipment, including camera and "mike" dollies has already been acquired by the State and will be installed as soon as construction of the studio has been completed.

Mr. McCluskey said that the studio may include a test kitchen. Programs showing the preparation of various seafood dishes in this kitchen will be part of the promotion program. Methods of fishing and the operation of seafood processing plants will also be subjects for special films.

The equipment to be used in the studio will be portable and can be used in many locations—even aboard the Department's vessel, the *Explorer*.

Fishing Interests Oppose Firing Range

Representatives of local wholesale fish and lobster firms, lobster catchers and fishermen met in Portland last month to draft plans to oppose a proposed anti-aircraft firing range in the Gulf of Maine. Among those present were Raymond Oakes, attorney for the group; Roderick B. Littlefield, chairman; John Willard, Jr., Robert W. Howlett, J. Howard Maxwell, Grover Churchill of the North Atlantic Lobster Institute, Edward Palmer and Bernard F. Harris.

The area of the proposed firing range also will affect fishermen and lobstermen at Biddeford Pool and Cape Porpoise.

Several of the representatives agreed that the army had chosen an area which is commercially the most lucrative of any place on the coast.

Small boat fishermen earn their livelihood the first six months of each year in the area. Also affected would be several thousand others in the fishing industry if the supplies could not be provided during this period.

It was estimated that at least 5,000 lobster traps are set in the area in the Winter months and five times as many during the Summer.

It further was estimated that several million pounds of whiting and nearly two million pounds of groundfish are taken from the area annually. Several hundred fish processors fillet these catches in local plants.

Fisheries Discussed at Conference

Four Maine tributaries were discussed at a conference of the Resources For the Future Committee, Inc., commissioned by the Ford Foundation, held at the Hotel Shoreham, Washington, D. C. on December 2-4.

Lincoln County was well represented at this conference. Among those attending were Sea & Shore Fisheries Commissioner Stanley R. Tupper, Boothbay Harbor; McKown Point Station Biologist Fred Baird, Edgecomb; and R. White Nichols, chairman of the Atlantic Salmon Restoration Committee of the Lincoln County Fish & Game Assoc., Wiscasset.

Commissioner Tupper said there were four clean rivers in Maine where fish might spawn — Sheepscot, Dennys, Machias and Narraguagus.

Principally interested in commercial fisheries, Tupper stated that he wants fish back in all Maine rivers. Pollution is hurting the soft shell clam industry in this state, he pointed out.

He further stated that Maine would rather have Federal funds and interest centered on maintaining the Orland Fish Hatchery, buying spawn and eggs, than in assigning Federal personnel to Maine.

Alvin Dyer's 30' lobster boat, which was designed and built by Reed Brothers of Boothbay Harbor, Me., and operates out of East Harpswell. She recently was repowered with an overhead valve 6-cylinder Osco Ford Marined engine of 100 hp. The craft is equipped with Michigan wheel; Plymouth rope and heading twine, Pettit paints, and Esso lubricating oil are used.

Portland Dragger Sinks

The Portland dragger *Clara and Louise*, Capt. Agnar Ness, burned and sank in 265 ft. of water early last month off Kittery. Her officers and crew were saved.

The Coast Guard cutter *Cactus*, which fought the fire, reported she was unable to control it because 4,000 gallons of fuel oil were touched off in the engine space and hold.

The dragger, valued at $45,000 is owned by Earl Crockett and Israel Jacobson, both of Portland. The vessel was rebuilt eight years ago.

Research Station Acquires New Launch

A 26-ft. launch was acquired recently by the Fish & Wildlife Service's McKown Point research station.

The vessel which came from the FWS hatchery at Gloucester, Mass. is designated FWS-1209, but as yet has no name.

Powered by an eight-cylinder Chrysler engine, the craft has a small shelter cabin. It will be used by station biologists in connection with quahog studies and other investigations being conducted in region waters.

Sardine Pack Shows Decline

Production of standard cans of Maine oil and mustard sardines for the 1953 season was 1,845,000 cases, representing the second shortest pack since 1938. The 1951 pack of 1,600,000 cases still holds the scarcity of fish record for the 16 year period.

The figures also showed an additional output of 320,000 cases of 5, 8, 15 and 16 ounce oval and round cans in mustard, tomato and other packing mediums for an industry wide total production of 2,165,000 cases.

In 1952, Maine's 43 plants packed 3,200,000 cases, while in 1950 they broke an all time record by turning out 3,900,000 cases, or 390,000,000 cans. Average pack for the past ten years has been about 2,700,000 cases.

Washington County, traditionally the sardine capitol of the U.S.A., was hardest hit as substantial runs of fish failed to show throughout the season, but other counties to the West saw nearly normal production.

Rockland Groundfish Landings for December

During December Rockland groundfish landings amounted to 1,259,700 lbs., which was a drop of approximately a half million lbs. from November. Ocean perch, with 1,256,600 lbs., made up the bulk of the catch. Production was heaviest on the 29th, when landings totalled 261,000 lbs., all ocean perch.

Great Lakes Fishermen See Excellent Season Ahead

Great Lakes commercial fishermen, generally, say that, although 1953 wasn't a banner year for them, it was better than 1952 when production of blue pike, particularly, dropped to a disappointing low.

In 1953, however, blue pike made an amazing comeback in Lake Erie to fill producers' nets. And with sizable hauls of chubs and record yields of perch from Lake Michigan waters and the over-all increase in herring yields, the year ended with fish production figures a lot higher than net fishermen had hoped for.

Fish producers in the Great Lakes have been studying trends, cycles and fishing areas, and the general concensus of opinion among Great Lakes fishermen is that 1954 and 1955 — particularly with use of nylon nets — will be most lucrative for them.

During the herring spawning season just ended, netters in the Bayfield, Wis. area of Lake Superior, enjoyed a good catch of lake herring, the bulk of which went to Booth Fisheries and Dormer Fish Co., buyers in that area, while producers on Green Bay, northern Lake Michigan, and in the Saginaw Bay area were bringing herring in by the tons.

On Lake Superior white fish catches were slightly improved. Lake trout catches from the big lake aren't impressive, while takes of burbot and other fish were fairly moderate.

On Green Bay, where a number of fishing boats are already tied up for Winter repairs, some nice whitefish hauls were reportedly had off the Manistique, Mich. area, and chub production is again under way with accelerated pace in southern Lake Michigan by Illinois and Indiana commercial netters.

On Lake Huron, Bayport, Mich. herring netters were getting profitable hauls, while fishermen operating out of other Saginaw Bay ports were doing likewise.

Lake Erie, closed to commercial fishing December 20, is primarily a bustle of repairing, painting, overhauling, and net mending operations. Some companies are making improvements at fisheries plants and docks, others are enlarging, while still others are extending facilities.

Canadian fishermen on Lake Ontario's eastern waters have been producing a fair quantity of herring, perch, pike, etc.

From Lake of the Woods, producers were still coming up with nice yields of yellow pike, pickerel and sauger—most of which were shipped to American markets.

Herring Fishermen Getting Big Hauls

First arrivals of the herring harvest were selling at 4 cents a pound after Green Bay herring netters lifted tons of the fish. Heaviest sales were to mink ranchers who plan to use the fish for mink feed. Some of the herring were consigned to Twin City fish houses at Menominee, Mich., and Marinette, Wis.

The *Griffin*, a fish-handling boat, arrived at Menominee from Washington Island on November 22 with about 20 tons of herring for Murray Grabowsky, Ingallston fish dealer, who resells to mink ranchers.

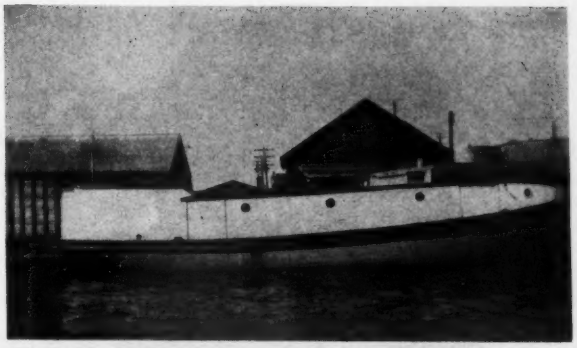
Michigan herring netters were reaping excellent hauls in November and boats of the 12-craft Bay Port fishing fleet were operating in waters of Saginaw Bay. One boat came in with a single load of 8,000 lbs. One day's total was 30,000, with production reaching a peak of 125,000 lbs. a day.

Bay Port's fish packers ice the herring in 50-lb. boxes and express them through the midwest and east.

Record Take in Trout Eggs

Lake Superior commercial fishermen have collected a record 3,200,000 lake trout eggs, Michigan Conservation Department reported recently.

The eggs, stripped from parent fish taken in commercial nets, were taken to the Marquette Hatchery for hatching. The fry will be planted in Lake Superior in an effort to hold up the lake trout population.



Ole E. Olsen's 55' gill netter "Grace" of Frankfort, Mich. She is powered with a 100 hp. Kahlenberg Diesel, and is equipped with Starr nets, Plymouth rope and Crossley net lifter.

At Bayfield, Wis., over 450,000 lake trout eggs are now in process of hatching at the Salmo Hatchery near there as the result of spawn-taking operations conducted by fishermen under supervision of Wisconsin Conservation Department.

Commercial netting of lake trout is prohibited in Lake Superior during October and the first ten days of November. To obtain spawn needed for its lake trout propagation, the Conservation Department hired a commercial fishing boat and crew to carry on the required netting operations with department employes supervising and aiding the project.

Heavy Perch Catches Reported

Perch catches in Lake Michigan have been running amazingly high this Fall and early Winter, much like the bountiful hauls of 30 to 40 years ago, according to a Saugatuck, Mich. commercial fisherman. Fishermen believe the increase in perch catches parallels the decline in whitefish and lake trout, victims of the sea lamprey.

Port Captains Appointed

To hold the price of herring, commercial fishermen sanctioned the appointment of port captains who will be the watchdogs of the commercial fishing activity during herring runs. Named by Wendell Beaucock, president of the Menominee, Mich. County Fishermen's Association, the captains include: Richard Barribeau, Fayette; Walter Olson, Escanaba; Norbert Swaer, Pensaukee, Dennis McDonald, Washington Island; Bodin Fisheries, Ashland; Emery Larsen, Sister Bay; Harvey Olson, Ellison Bay; Stuart Woerfel, Fish Creek; Tom Claflin, Sturgeon Bay; Kermit Kleinke, Marinette; and Wendell Beaucock, Menominee Bay Shore.

Herring Freezing Completed

The herring project at the Herbert A. Nieman Cold Storage Plant, about 2½ miles South of Hermansville, Mich., was recently completed. Upwards of 375 tons of herring have been frozen by Nieman for a Milwaukee fish wholesaler. Irwin L. Sutherland is in charge of the plant.

Canada Establishes Research Committee

The Canadian Federal Government and the Ontario Provincial Government recently established a Great Lakes Fisheries Research Committee. In 1954 the Federal-Provincial committee is planning to expand fisheries research in all the Great Lakes.

As part of the 1953-54 lamprey control program, preliminary surveys were made in over 40 streams on the eastern shore of Lake Superior, from Sault Ste. Marie north and west to the Montreal River. Electric weirs and other barriers are being installed on several rivers and creeks.

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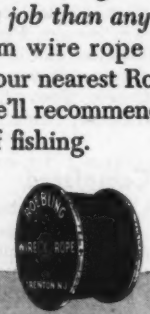

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Long Island Clammers Form Association

A group of clammers in the West Sayville area have voted to form a clamdiggers association to promote the shellfish industry in the Town of Islip. The town for several years has been the top clam producing area in the State of New York. For the past couple of years, however, production has lagged, causing considerable concern among the baymen.

Although the free bottoms are not producing, there is a considerable area of privately owned grounds which is believed capable of supporting most of the baymen for some time.

Through the efforts of the Long Island Fishermen's Association, arrangements have been made between the Bluepoints Co., owners of the area, to lease some 20 square miles of bay bottom to the baymen. Under the proposed agreement, the baymen will pay the Bluepoints Co. the amount of the annual taxes on the grounds. A fee of 25¢ per bushel for each clammer working on the leased grounds is believed sufficient to meet the obligation. The individual bayman may dispose of his production as he sees fit. The arrangement between the two parties will be for one year.

Oysterman in Business 25 Years

John Plock, one of the outstanding figures in the oyster industry on the East Coast, who is the head of the Shelter Island Oyster Co. of Greenport, celebrated his 25th anniversary in business recently.

He started his operation in a small way at a stand in Fulton Market. Possessing a thorough knowledge of the oyster industry, Mr. Plock's firm continued to grow until in 1931 he opened an oyster shucking business in Brooklyn.

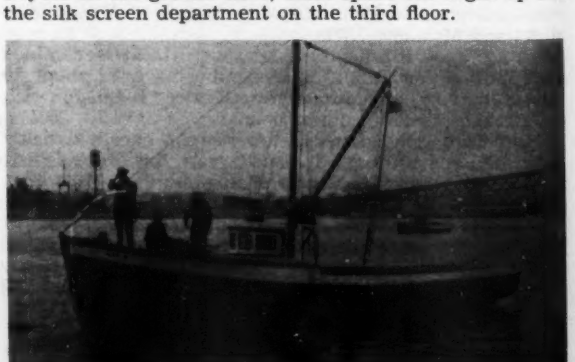
In 1935 he organized the Shelter Island Oyster Co. and it was in 1936 that he built the original small oyster shop on Rackett's Basin at the entrance to Sterling Basin, Greenport, where the headquarters of the Shelter Island Oyster Co. is now located.

In 1939 Mr. Plock bought out the one oyster boat and some of the beds owned by the Modern Oyster Co. and became actively interested in the cultivation of oysters. In 1944 he purchased the oyster beds, boats and equipment of the H. J. Lewis Oyster Co. of Bridgeport, Conn., which he has maintained as a separate corporation.

Mr. Plock was the originator of "Shuck-Em", a mechanical device for opening oysters.

New Location for Fishery Council Offices

The Fishery Council has moved its offices to 207 Front St., New York City. The new premises are set up with a booth for distribution of streamers and posters to fish buyers on the ground floor, office space one flight up and the silk screen department on the third floor.



The "Ray II", 38' lobster boat designed and built by her owner, Clarence DeCosta of Groton, Conn., in 1946. Named for the owner's son Raymond, the craft is powered with a 107 hp. Lathrop engine.

"Holy Family"

(Continued from page 16)

which by-passes water around the heat exchanger as necessary. Lube oil temperature is regulated by a similar valve which by-passes lube around the oil cooler, also mounted on the starboard side of the engine. The amount of make-up water needed is negligible, averaging about two gallons every three or four months.

Lube oil is pumped under pressure to the cylinders and bearing surfaces by a positive gear-type pump built into the engine. Oil is cleaned continuously by a full-flow strainer and a portion is by-passed through a filter. This filtering system has been so effective that no oil change was found necessary for the first 2500 hours of engine operation. Samples are sent regularly to a laboratory at the end of every second trip for complete analysis and almost invariably are found in excellent condition. A hand-cranked prelubrication pump is provided for supplying oil to the cylinders and bearing surfaces before starting up the engine.

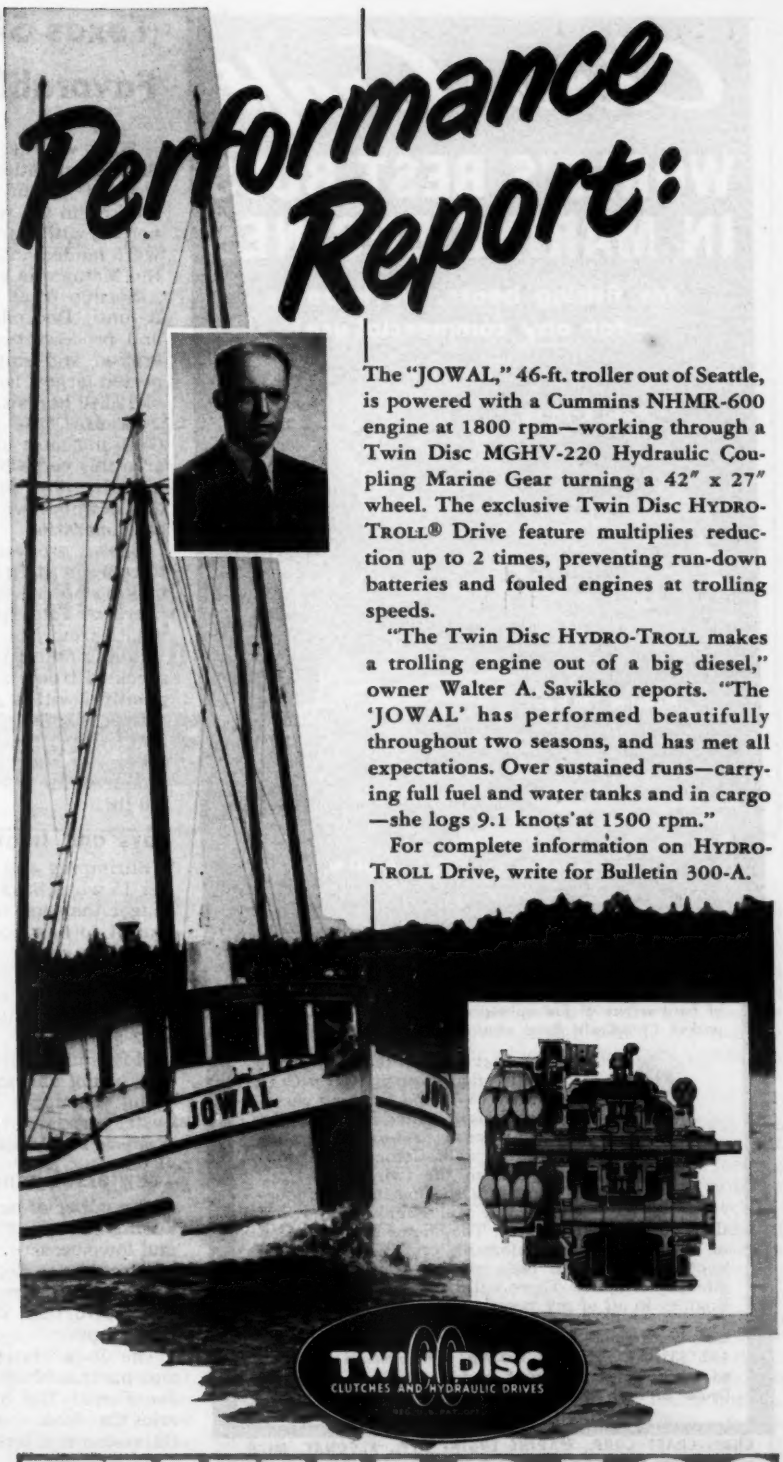
Sea water is used for cooling purposes, being picked up from the boat's sea chest by an engine-driven pump and sent to the heat exchanger and lube oil cooler.

Instantaneous engine control from the pilot house is provided for both forward and reverse speeds by a set of air-actuated, finger-tip controls conveniently located on the bulkhead just behind the wheel. A duplicate set of controls, also of the push-button type, is mounted on the reverse-gear housing in the engine room.

A two-stage air compressor, driven off the main engine, supplies 250 lbs. of compressed air. Electric power is provided by two generators, one of 5 kw., driven off the main engine, and the other of 6 kw., driven by a 10-hp. Fairbanks-Morse Diesel engine. This is sufficient for both ship's service and auxiliary needs.

The pilot house includes an Edson hand steering gear for controlling the vessel's steel rudder; RCA radar, radio-telephone and Loran; Bludworth direction finder, two Submarine Signal Raytheon Fathometers and a Kahlenberg three-trumpet air horn.

The *Holy Family* has bunk facilities for 13 and normally carries a crew of eight to twelve men. There are eight bunks located forward in the forecastle, two in the pilothouse and three in the after cabin. Galley facilities include an oil-fired Shipmate stove, refrigerator and a water plant. Fresh water for cooking and drinking is stored in two 450-gallon galvanized steel tanks located in the galley. Driven through a front-end takeoff and a 100-hp. Air Flex clutch on the main engine, is a Gloucester Machine Shop winch.



The "JOWAL," 46-ft. troller out of Seattle, is powered with a Cummins NHMR-600 engine at 1800 rpm—working through a Twin Disc MGHV-220 Hydraulic Coupling Marine Gear turning a 42" x 27" wheel. The exclusive Twin Disc HYDRO-TROLL® Drive feature multiplies reduction up to 2 times, preventing run-down batteries and fouled engines at trolling speeds.

"The Twin Disc HYDRO-TROLL makes a trolling engine out of a big diesel," owner Walter A. Savikko reports. "The 'JOWAL' has performed beautifully throughout two seasons, and has met all expectations. Over sustained runs—carrying full fuel and water tanks and in cargo—she logs 9.1 knots at 1500 rpm."

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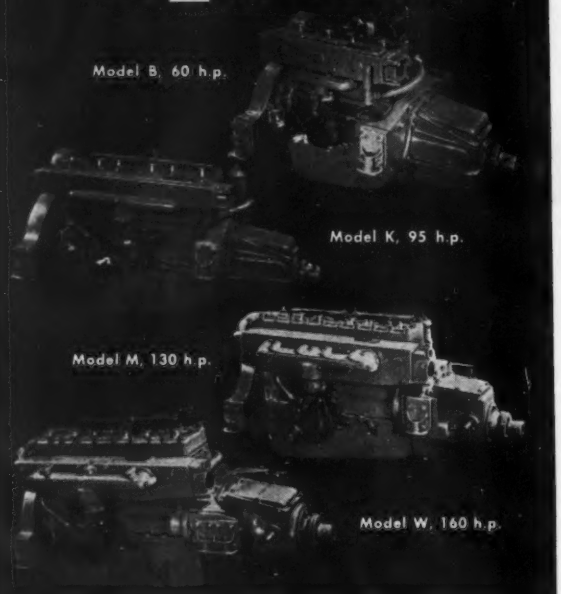

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Rudolph Kovacs

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Texas Shrimpers Aided by Favorable Weather

With weather generally favorable for Gulf and bay fishing operations from November 25 to December 25, seafood production was good. Bay shrimp trawlers worked in the waters north of Aransas Bay until December 15, with fair results. Mixed white and brown shrimp were landed and almost half of the production came from the Matagorda area.

Shrimp from the lower south Gulf continued to come in until December 20 when landings started to decline and processing plants stayed open only for routine operation and shipping. Brownsville-Port Isabel area reported largest landings with an official total for the period of 12,840 barrels.

Aransas Pass area had fair runs of white shrimp in the Gulf and most of these were the best shrimp seen in the area this year. Night shrimping for brownies off the coast in water 10 to 20 fathoms came to an end around the first of December when they became too scattered for profitable operation.

Brown grooved shrimp from the south Gulf continued to come in at Aransas Pass, Corpus Christi and Rockport, making up at least 85 per cent of the area's catch of 5,030 barrels. Total production for the Texas coast for the month from Nov. 25 to Dec. 25 was 21,560 barrels.

Edible finfish production was good. Bay fish, including speckled trout, black and red drum, and sheepshead were plentiful with a good market.

Deep sea fish from the Gulf also were in good supply. Red snapper, warsaw and jewfish came in with prices to fishermen steady. The unofficial total of edible finfish produced for the month from the entire coast was 256,970 lbs.

Bays and Inland Waters Closed

Shrimping and most net fishing came to a halt December 15 when bays and inland waters were closed to trawls longer than ten feet. This means that all bays are closed except to bait boats, and will remain so until March 15.

During recent months, Texas fishermen have worked long hours, day and much of the night, to pile up an enviable record in the production of shrimp and finfish that may top the all-time production record for the year 1952-53.

Most small, light draft trawlers are tied to docks awaiting Spring and the re-opening of the bays. A few boats along the upper coast have exchanged shrimp nets for oyster dredging gear and are working the bays from Aransas Pass around the coast to the Sabine River.

Trawlers Change Hands

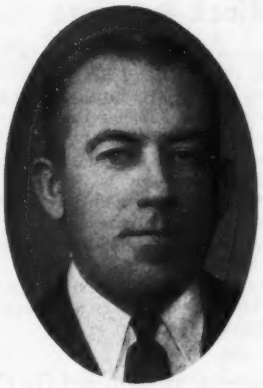
A number of out-of-state trawlers have been purchased during the late Fall by shrimp producers on the middle and lower coast.

The trawler *Southport*, a 65-ft. boat, was purchased by F. P. Tower from its owner in Morgan City, La. It will operate for the WPB Shrimp Co. Delbert Cole will be the skipper.

The 70-ft. trawler *General Bradley*, a steel hull boat, was purchased by the Wait and Beuteleschies Bros. from Joe Ferra. The boat will work out of the Border Fisheries Co. dock, a company in which Joe Grasso & Sons of Galveston is interested.

Loses Shrimp Trawler

The Patterson Shrimp Co. of Brownsville lost their shrimp trawler *Four Kids* December 3. The trawler was bucking heavy seas in the Gulf en route to Aransas Pass with a cargo of shrimp. The rough seas caused the seams in the hull to open and permit more water to enter than the pumping equipment could handle. After deciding it was impossible to reach Port Aransas, the captain drove the trawler into the surf of Padre Island to prevent it from sinking in deep water.



It is my desire at this time to express my humble appreciation, to those many customers, fellow-employees, and suppliers, who have given me so much encouragement and support in the organization of this company.

WALTER F. CONKLIN, President

The FISH NET & TWINE COMPANY
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Serving the Fishermen's Needs for Over 100 Years

Methods for Controlling Drill

(Continued from page 17)

The snails drill whatever surface of the oyster presents itself, although there is some tendency for the holes to be in the posterior dorsal area; that is, near the oyster's exhalent current of water. We have found no preference for the muscle scar area as stated by some writers.

Determining Rate of Kill

The rate of kill as shown by laboratory experiments may be misleading, since usually a single type of food is presented and the snails have the chance to consume the oysters they kill. In the field there is a wide variety of food available, and moreover, when a snail kills an oyster it is likely that secondary predators will consume most of the meat before the snail has a chance.

The following data give the consumption of oysters by semi-starved snails and probably represents the maximum rate of kill: 1" snails ate 0.3 spat (1") per day for 30 days; 2" snails ate 0.5 oysters (2") per day for 30 days; 2½" snails ate 3 spat (7-day-old) per hour for 2-day period. If these figures are expanded on a theoretical basis and assuming an average 5-year life span for the snail, we may say that each mature conch represents during its lifetime the loss of a thousand market oysters plus an untold number of spat.

In experiments in which snails were presented with a choice of spat or mussels as food, the results were quite striking. Within two hours 25% of the mussels were eaten and none of the spat were attacked. At the end of eighteen hours, all mussels had been eaten, 10 per cent of the spat had been eaten and another 50 per cent were being consumed. Forty per cent of the spat were still untouched. Over a period of days there is a preferential selection of approximately 8 mussels to one spat.

In the breeding season the snails are very gregarious and exhibit a marked negative geotropism. In other words, they gather in relatively large groups and climb up on any hard object sticking up from the bottom in order to deposit their eggs. It is possible to kill large numbers of adults and eggs by placing stakes on the reefs during this period and removing them when covered to dry out. This method is only partially effective because of the short period of development within the capsule and the extended period in which capsules are deposited.

Influence of Temperature

The snail's activity, including feeding, is under the control of temperature as well as salinity levels. At temperatures of 12°C, about 55°F, snails stop feeding and come to rest; at lower temperatures they enter a state of hibernation and respond only slightly to mechanical stimuli. The length of such hibernation periods, of course, varies with the geographical area and the severity of the Winter climate. Usually, when hibernating, they bury themselves in the sand or mud.

Snails move fairly rapidly covering 10-12' per hour on a smooth hard bottom. They can move up to 30' per hour on glass surfaces. We have found no natural bottoms which serve as a barrier to their movements. Although they appear to prefer the hard shell reef or rocky bottom, it is probably because of food availability. They are able to cross without difficulty 15 yards of mud too soft to support an oyster in order to reach a baited trap.

The only really effective barrier to snail migration is a chemical one—lack of sufficient salt in the water. They are normally absent from those areas having a sustained salinity level of less than 15 ppt. Their tolerance to short exposures of fresher water is broad, however, and they can withstand entirely fresh water for several days without undue harm. They apparently do not have what might be termed a fixed minimal salinity death point. Like all estuarine animals they are capable of adjusting to rather wide salinity changes over a period of time.

Here's Why You Need the AQUA-CLEAR Feeder

The badly rusted and corroded pipe at the left was taken from an unprotected line. The right-hand section shows how the AQUA-CLEAR Feeder keeps your entire cooling system clean as new, free from rust or salting down.

Throw Your Heat Exchanger Troubles Overboard

Now you can greatly lengthen the life of your engine, and cut operating costs. AQUA-CLEAR Feeders have proved so efficient on fishboats that many new boats are being equipped with them and old boats are doing away with closed cooling. The AQUA-CLEAR Feeder saves hundreds of dollars on repairs, break-downs, lay-ups, and lost time.

Does Away with Cumbersome Heat Exchangers, Keel Coolers, Expansion Tanks, Extra Pumps, etc.

Don't put a lot of money into complicated fresh water cooling systems—save all this expense and the extra space a closed cooling system requires. No extra holes through the hull, no complicated piping, no need to haul the boat. Makes old engines last longer, keeps new ones from ever rusting. Sizes for all engines from outboard to heaviest dragger or tuna boat, even freighters and liners.

Cool Direct with Raw Sea Water

without RUST, CORROSION, or Salting Down the Engine!

Every fisherman knows what salt water does to metal—and it ruins marine engines in short order. The AQUA-CLEAR Feeder treats all the water that goes through the cooling system so it is completely non-corrosive. Prevents salting down the engine, even under abnormal temperatures.

Easy to attach between seacock and water pump. Saves hundreds of dollars in original cost and installation—better yet, requires no maintenance. Yet with all its advantages, the AQUA-CLEAR Feeder costs less than $75 for most engines.

Over 20,000 Now in Use!

FREE folder tells how to lengthen the life of your engine, eliminate lay-ups, save repair expense. Write for it today.

Sold and Installed by Leading Boatyards

You Take No Risk!

Use the AQUA-CLEAR Feeder on your own boat —see for yourself what it will do. We want you to be completely satisfied. Money-Back Guarantee.

Sudbury Laboratory Box 261, South Sudbury, Mass.

Dealers: Write for Special Offer.

For Processing Plants

AQUA-CLEAR Feeders also solve even the toughest problems of salt water corrosion and rust in pipes, tanks, refrigeration lines, etc. The treated water is safe in foods and for drinking. Write for details.

AQUA-CLEAR Feeders

Boston Has Record Pollock Receipts

December 21 was a big day at the Fish Pier, with 1,129,400 pounds of fresh fish being landed. In the receipts were 323,000 lbs. of pollock, which sold at $2.10 per 100 lbs. It was the biggest single day for pollock for the past year.

Other receipts included 275,000 lbs. haddock, 152,000 lbs. haddock scrod, 51,300 lbs. cod, 27,800 lbs. ocean perch and 300,300 lbs. mixed fish.

The catch was landed by six trawlers, 11 large draggers and four small draggers.

Influence of Demand On Catch

A paper entitled "The Determinants of Food Production from the Sea" was delivered recently in Boston at one of the section symposiums of the American Association for the Advancement of Science, by Dr. Harden F. Taylor, research professor at the University of North Carolina Institute of Fisheries Research.

Taylor cited estimates of the magnitude of the sea, its chemicals and its plankton productivity, and said that the fish yield "is immune to anything that man is now able to do to impair or deplete it." But he deplored the fact that the edible portion of the yield of the sea taken by all the world's fisheries is not quite one per cent by weight of man's total food supply.

Dr. Taylor remarked that "there is good reason to believe that general abundance or scarcity of fish is not now the sole or even the main determinant of production, nor the principal problem to be solved."

One problem, not the principal one, he said, is that "the people of the world are not where the fish are . . . some of the great concentrations of fish are far remote from dense human populations . . . (and) the delicacy and perishability of fish further complicate the problems of exploiting these remote sources."

Taylor concluded that the principal problem is economic: "Plainly the determinant of production of sea fish is not, at present, limited supply; it is limited and feeble demand," in relation to the demand for other foods.

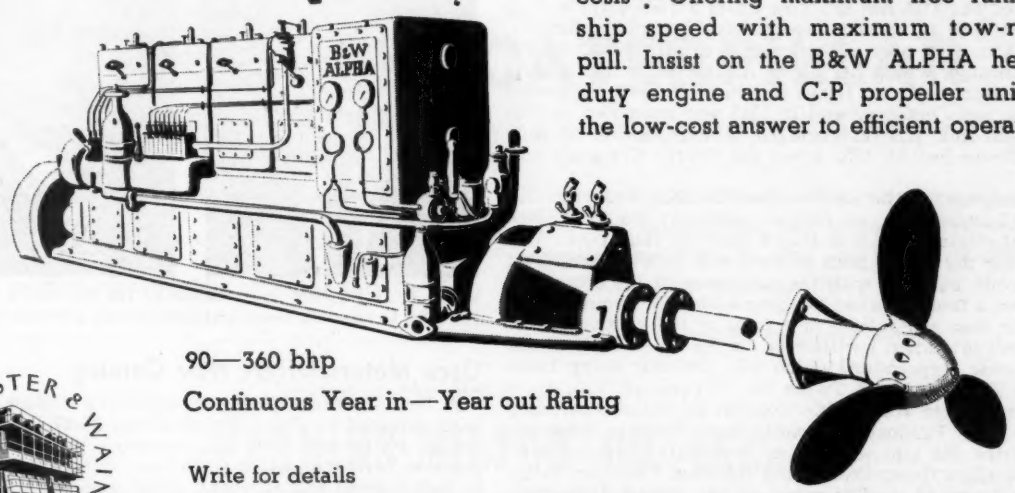
Haddock Pact Violations

The first large-scale arrests to enforce provisions of the new international haddock conservation treaty for the Northwest Atlantic, were made recently.

Twelve fishing captains operating out of Massachusetts ports were named in papers filed December 31 in U. S. District Court, Boston. Provisions of the treaty, adopted last year, require that boats use nets having meshes of not less than 4½".

B&W Alpha

"CONTROLLABLE PITCH PROPELLERS OFFER IMPORTANT ADVANTAGES" is the conclusion of world authorities at the *International Fishing Boat Congress* at Miami—Reduced over-all cost, economy in fuel, lower maintenance and repair costs—Offering maximum free running ship speed with maximum tow-rope pull. Insist on the B&W ALPHA heavy duty engine and C-P propeller unit as the low-cost answer to efficient operation.



90—360 bhp

Continuous Year in—Year out Rating

Write for details

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17 Battery Place, New York 4, N. Y.

BURMEISTER & WAIN AMERICAN CORPORATION

New Jersey Fishermen Ask Aid on Dredging Shoals

Residents of Barnegat Light demanded some form of State or Federal aid last month as they faced a gradually more serious shoal situation at Barnegat Inlet. As a result of the November 6th and 7th northeaster, two sand bars formed at the mouth of the channel and since then have continually built up to such a point that now many boat owners cannot use the pass. Others who depend on it say they are taking a considerable risk.

The sand bars now allow only four and a half feet at mean high water and each day more sand is being added. Particularly hard hit are the many commercial fishermen in the area who must use the inlet almost daily. They point out the nearly impossible task of having to regulate their passage to take advantage of high tide. They say that the pass is virtually closed at low tide.

The pound net fishery was badly damaged by the November storm and two pound net fishing firms in Seaside Park, in continuous operation for a number of years, have now given up. The ocean pound nets at Point Pleasant suffered relatively minor damage. A preliminary survey of the ocean pound net fishery in New Jersey indicates that only about six outfits will be operating during the 1954 season.

The Raritan Bay area in Monmouth County also suffered considerably from this storm. Exceptionally high tides flooded out vast lowland areas where most docks and loading facilities are located, with the consequential loss of fish boxes, pound poles, and miscellaneous lumber supplies. Fishermen were kept busy for several days hunting down and sorting out material that had floated away on the tide.

Sea bass pot and lobster pot fishermen suffered some loss in the storm also. Several fishermen reported losses of 100 or more pots each, while many others lost less. In the fish and lobster pot fisheries it was more common for gear to be moved considerable distances by wind and tide than to be torn up and lost.

Search for Scalloper Ended

An air-sea search off Wildwood was started on December 21 for the 83-ft. scalloper *Susan* which put out from Cape May on December 5 with seven persons aboard. The vessel is owned by Paul F. Wood, who operates a shellfish business in New York City. The master of the boat is Norman Josefsen of Brooklyn.

On December 24 the Fifth Coast Guard District headquarters at Norfolk, Va. announced that the "active search" for the *Susan* had been brought to an end with the vessel still missing.

A Coast Guard spokesman said that 110,000 square miles of the Atlantic Ocean have been covered by surface and air craft without finding anything indicating what had happened to the long overdue vessel.

Although no more planes or boats were being ordered out with the specific mission of searching for the *Susan*, all ships and Coast Guard vessels passing through the ocean area between Cape May, N. J. and Chincoteague, Va. have been asked to keep on the lookout for the vessel.

Fishermen Seek Equal Representation

Steps to seek equality in representation on the State Fish & Game Council were taken last month by the Commercial Fishermen, Trappers' and Land Owners' Assoc. of South Jersey, in the form of a resolution. A copy of the resolution will be sent to Gov.-elect Robert B. Meyner asking him to bring about an equality in representation on the council by setting the membership at three sportsmen, three farmers and two commercial fishermen, with one member-at-large to be appointed by the Governor. The present ratio is six sportsmen, three farmers and two commercial fishermen.

Equipment and Supply Trade News

Conklin Buys Fish Net & Twine Co.

Walter F. Conklin of Glenview, Ill. has purchased the assets of The Fish Net & Twine Co. of Jersey City, N. J. as of December 31, and has become president of the firm.

Conklin was previously associated with R. J. Ederer Co., Chicago, which he joined in 1930 as a fish netting salesman in the Great Lakes territory. In 1940, he became general sales manager and in 1945 was promoted to vice president and general manager, which position he held until November 30, 1953 when the Ederer Company was sold.

In announcing the sale of The Fish Net & Twine Co., Lewis Lichtenstein, its former president stated: "Since the unfortunate accident that I suffered four years ago, involving the loss of both of my limbs, I have carried on our family business with the assistance of my son. This has been a family-owned business under the same ownership for four generations or a total of 104 years. At Mr. Conklin's invitation I will serve on the board of directors of the new corporation, which will continue doing business as The Fish Net & Twine Co.

During World War II, Mr. Conklin served as a member of the War Production Board, Fish Netting Advisory Committee. He also was one of the original members of the Executive Committee of the National Fisheries Institute and served as Chairman of the Allied Industries Committee of the Association at the time of its first convention at Chicago, Ill. in 1945.

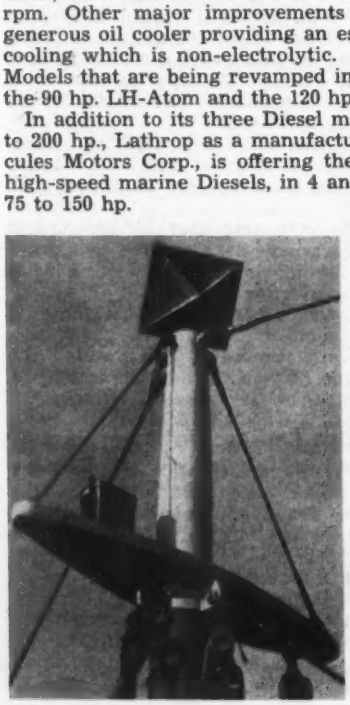
Walter F. Conklin, left, new president of The Fish Net & Twine Co.; and Lewis Lichtenstein, former president and now a director of the firm.

Lathrop Marine Engines Improved

The Lathrop Engine Co., Mystic, Conn. has been carrying on a systematic program for improving its gasoline and Diesel marine engine line. The gasoline engines have been redesigned to give a substantial increase in horsepower on most models.

The Lathrop LH-Super, with 339 cubic inch displacement, now will deliver 145 or more horsepower at 3200 rpm. Other major improvements include an unusually generous oil cooler providing an estimated 600" of direct cooling which is non-electrolytic. Other sizes of the LH Models that are being revamped include the 45 hp. LH-4, the 90 hp. LH-Atom and the 120 hp. LH-Deluxe.

In addition to its three Diesel models, ranging from 60 to 200 hp., Lathrop as a manufacturing customer of Hercules Motors Corp., is offering their line of lightweight, high-speed marine Diesels, in 4 and 6-cylinder models of 75 to 150 hp.



New radar reflector developed by Manchester Marine Construction Co., Manchester, Mass. This device, measuring 12" for the smaller one or 16" for the large one, was designed by naval architect Dwight S. Simpson. It can be picked up in fog by the screen of a radar-equipped vessel as far as 16 miles away. The reflector is octahedron, and is particularly valuable for enabling planes or search vessels to spot distressed craft.

Osco Motors Offers New Catalog

A new comprehensive and attractive catalog has just been released by Osco Motors Corp., 36-27 Lawrence St. North, Philadelphia 40, Pa., covering its entire line of genuine Ford Marined engines from 25 to 205 horsepower in both L-head and overhead valve models.

A simple cross-reference guide details a complete array of Convo parts, kits, marine reverse and reduction gears for the full conversion of all popular Ford engines to marine use. Included too are propeller recommendation forms and illustrated displays of typical installations.

For 1954, Osco offers ten series of gasoline marine engines covering the range of 25-165 hp. and three series of Diesel marine engines 25-85 hp. Each of these series of engines is manufactured with optional reduction gear ratios where required.

Smallest gasoline engine of the Osco line is the 25 hp. Sea Atom of 65 cubic inches and 268 pounds dry weight. This compact engine has completely gear driven auxiliaries and is entirely devoid of belt drives.

Upper horsepower ranges of the Osco list include the complete line of genuine Ford Marined engines — the 100 hp. 215 cubic inch valve-in-head Six, the universally popular 102 hp. V8 of 239 cubic inches, a 115 hp. 254 cubic inch L-head Six and the 165 hp. 317 cubic inch overhead valve V8. All are available in both medium and heavy duty models, and employ Osco's exclusive Circuit-Flo thermal manifolding system as well as featuring full ball-bearing water pumps with concentric rubber impellers.

Kelly Manager of Exide Boston Branch

John W. Kelly, of Decatur, Ga., has been appointed manager of The Electric Storage Battery Company's branch office at 100 Ashford St., Boston. Formerly a sales engineer with the company's Atlanta branch, he will be responsible for sales and service of Exide industrial batteries in Maine, Vermont, New Hampshire, Massachusetts and part of Connecticut.

Kelly joined Exide's Atlanta branch in 1946 as a sales engineer after his release from U. S. Navy as a lieutenant commander. He traveled for the company in Georgia, Florida and South Carolina.

Fram Has New Marine Catalog

A new marine catalog is now available from the Fram Corp., Providence 16, R. I., manufacturer of oil, air, fuel and water filters. The catalog contains Fram's complete line of filters for marine engine protection, as well as a

YOUR MARINE HEADQUARTERS for CATERPILLAR*

Sales • Parts • Service

WE have opened a marine office at 4 Water Street, Fairhaven, to assure you of fast, dependable, efficient service.

A complete line of Caterpillar marine engine parts and accessories, and a factory-trained mechanic available to give you the parts and the service when you want it.

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Main Office: 376 Dorchester Ave., Boston, Mass. *Phone:* SOuth Boston 8-4660

detailed listing of lines and fittings for marine installations.

Included in the catalog are specifications and sizes for oil filters, fuel oil filters, replacement cartridges, and a complete cross reference list of filters for marine engines.

Propeller Engineering Service for Boat Owners

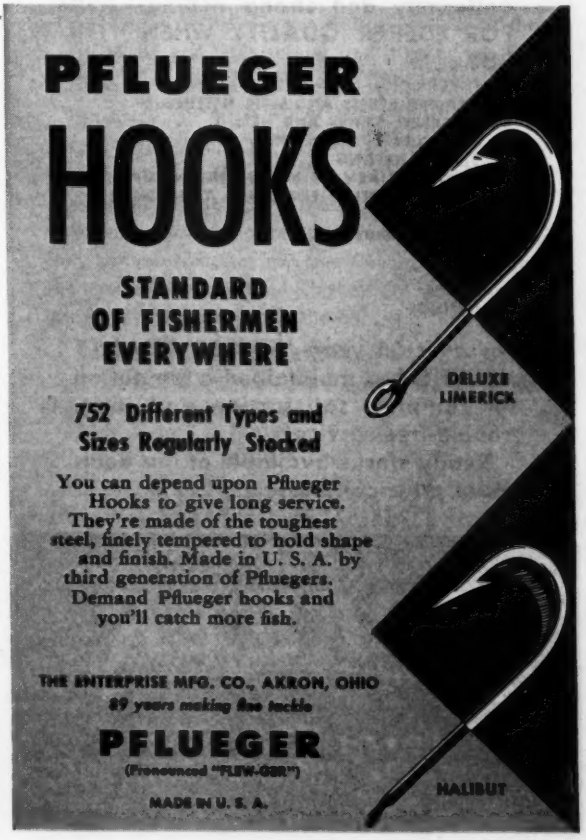
In order to eliminate the costly cut and try methods often employed by boat owners searching for the correct propeller for a given boat and power, Bowly, Holmes & Hecker, Inc. of 123 Chambers St., New York 7, N. Y., backed by forty years experience, have established a propeller consultant department.

The firm has found that some people want maximum economy, some maximum speed regardless of fuel consumption, while others want the best general average. Still others want an honest, unbiased opinion of what to expect from various gear reductions. Requests for any information are figured separately by 1. A Marine Engineer. 2. A Naval Architect. 3. Their own staff's knowledge backed by voluminous data. These combined findings are then pooled and discussed if variations are found and the composite answer is supplied at no charge.

New Rust-Oleum General Catalog

The Rust-Oleum Corp., 2799 Oakton St., Evanston, Ill., has released its new 1954 general catalog on rust preventives. The new, enlarged catalog features 94 color chips of Rust-Oleum products, and includes complete instructions for surface preparation and application of Rust-Oleum primers, short oil type, long oil type, machinery and implement finishes, chemical and heat resistant types, sealers and thinning oils. Application photos are used throughout the book.

In addition, two pages of the new catalog are devoted to questions and answers. Full and clear explanations are given on all problems relating to the surface preparation and applications of Rust-Oleum products.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HOOKS
STANDARD OF FISHERMEN EVERYWHERE
752 Different Types and Sizes Regularly Stocked
You can depend upon Pflueger Hooks to give long service. They're made of the toughest steel, finely tempered to hold shape and finish. Made in U. S. A. by third generation of Pfluegers. Demand Pflueger hooks and you'll catch more fish.
THE ENTERPRISE MFG. CO., AKRON, OHIO
89 years making fine tackle
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(Pronounced "FLEW-GER")
MADE IN U. S. A.
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HALIBUT

Month after month, thousands of pounds of EDERER NETTING is tagged for ports along the Atlantic, Southern Waters, and the Gulf Coast. The fact that each year sees more and more EDERER quality netting in these areas, is conclusive evidence that EDERER NETTING is tops for ocean or inland water fishing. To be sure of uniformity and strong netting—ASK FOR EDERER QUALITY WHEN YOU BUY . . .

SARDINE SEINES AND WEIR NETTING
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COTTON, LINEN OR NYLON GILL NETTING
COTTON NETTING FOR TRAPS AND POUNDS
TWINE
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For over 65 years, EDERER QUALITY NETTING has maintained a reputation for complete satisfaction and long, trouble-free service.

Ready stocks available at our dealers in principal ports.

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THE LINEN THREAD CO., INC.
540 Orleans Street Chicago 10, Illinois

Capt. Richard Dobbin, master of the "Flying Cloud" of the Irving Usen Trawling Co. fleet, Boston, Mass., shown operating the Fischlupe aboard his boat.

New Electronic Fish-Finder Installed on Boston Trawler

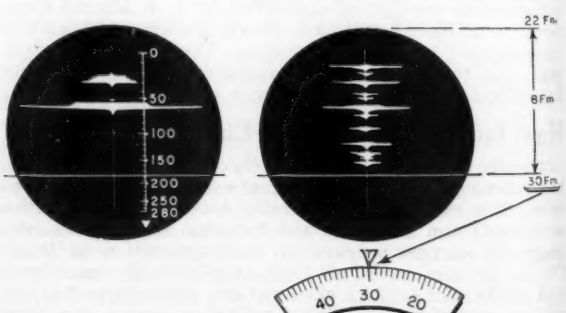
The first commercial installation in this country of the new electronic fish-finder, Fischlupe, and the new recording depth sounder, Echograph, was made recently on the fishing trawler *Flying Cloud* of the Irving Usen Trawling Co. at Boston, Mass. Fischlupe locates fish, spots underwater hazards that hang fishing nets, aids navigation and functions as an underwater depth indicator. Both Fischlupe and Echograph, which are distributed by Radiomarine Corporation of America, were developed by Electroacustic G.m.b.H. of Kiel, Germany.

Fischlupe, which means "Fish-Lens", is one of the most modern cathode ray type depth sounders. Its greatest advantage in its function as a fish-finder is that it provides a clear visual indication of fish reflections. It is so sensitive that it detects and shows whether the reflection on the scope is being made by a single fish or a school.

The cathode ray tube measures depth and display echoes downward through the water on the same basic principle that a radar scope measures distance through the air. A school of fish appears as short horizontal traces on the cathode ray tube.

The depth at which the school of fish appears can be read directly from a calibrated scale, and the school can be magnified to give larger horizontal traces by merely turning a switch. The face of the tube then will show an eight-fathom vertical area. This or any other eight-fathom vertical area may be moved up and down, and accurate measurements made of the depth and density of the school.

When the operating switch is in the fixed position, the cathode ray tube covers the normal maximum range of 280 fathoms. In the variable position any eight-fathom



Typical presentations of the Fischlupe scope. Left: the sea bed appears at 60 fathoms and a school of fish at 30 fathoms. Right: With the range control set for an 8-fathom layer, a close-up view of the fish between 22 and 30 fathoms is obtained.

depth may be selected between the vessel's bottom and the sea-bed. The depth scale is controlled by a knob and may be adjusted to any depth setting to a maximum of 320 fathoms. An eight-day clock on the front panel of the Fischlupe permits the fisherman, knowing the speed of his vessel, to determine the extent of a school of fish by estimating the time it takes to pass over it.

With Fischlupe the length of fishing time can be reduced; unprofitable "sets" can be avoided; and nets can be hauled in at the most profitable time. Indications of the sea-bed are readily shown on Fischlupe, making it ideal for navigation and survey work.

To obtain a permanent record of the bottom contour and underwater conditions, Echograph, an eight-range recording depth sounder, can be installed as an independent unit or as a supplement to Fischlupe. Only one small switchbox adaptor unit and the indicator or recorder are required where a combination of equipments is assembled. The same transmitting and receiving transducers, pulse generator and motor generator (if required) are used for operating both devices.

Operating on the same basic echo sounding principle as Fischlupe, Echograph instantaneously reproduces underwater conditions on an 8" wide electrosensitive, dry recording paper. The size and depth of fish-shoals, plankton, rocks and wrecks under a vessel are shown on the chart.

The eight-ranges provided by Echograph give fishermen a good picture of underwater conditions, saving them many hours in locating shoals and setting their drift nets, midwater nets or trawl nets. Echoes from plankton and mud can be cut down to a point where they will not interfere with the clear indications of echoes from objects near the surface. Provision is made for automatic marking of the Echograph's recording chart at 5-minute intervals, in addition to manual marking.

Rhode Island Closes Area to Protect Quahaug Set

Old Warwick Cove between Oakland Beach and Warwick Neck was ordered closed off to fishermen on January 2 to protect a large "set" of quahaugs in the area.

Edward C. Hayes, Jr., chief of the Division of Fish & Game, said he closed the area under a general law which allows the chief of the Division to protect shellfish for development purposes.

Hayes said his wardens have checked Old Warwick Cove thoroughly and have found large numbers of tiny quahaugs about mid-way up the cove. The cove will be closed off West of a line extending from Kirby Ave., Warwick Neck, to Hewitt St., Oakland Beach.

Would Strengthen Shellfish Laws

At the request of Governor Roberts, a bill was filed in the Legislature on January 5 to permit fish and game wardens to search for and seize illegal shellfish wherever found. Wardens could enter any premise, except a private home, without a search warrant to investigate and they could go into private homes with a search warrant. Shellfish enforcement has been deterred because wardens have been without power to seize illegal shellfish on land.

John L. Rego, state director of Agriculture and Conservation, believes that the present shellfish laws should be made stronger and he has proposed legislation to the effect, and also legislation which would prevent the shipping of undersized quahogs out of the State.

Cold Weather Helps Oyster Business

According to some Warren oyster plant managers, lack of cold weather kept the oyster business down early last month. However, around the 19th the temperatures dropped to 15 and the oyster market zoomed immediately.

The grower's perennial problem, lack of oysters, was particularly acute this year since transplants from Connecticut waters have been sparse.

a Clean Bottom
. . . more fish!

With a clean bottom you reach the grounds sooner and it takes you less time to get home. That means more time for fishing . . . more fish.

INTERNATIONAL COPPER PAINTS help you keep grass and shells off the bottom and prevent the ravages of the teredo worm. These paints are the most effective, reasonably priced bottom paints attainable. They contain toxics of extreme fineness and purity. The thoroughness with which they are ground eliminates any hard settling in the can.

G. M. TROPICAL COPPER PAINT and G. M. FISHING COPPER BOTTOM PAINT are made especially for the work boat and fisherman.

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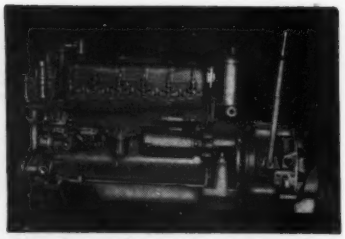

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A built-in power margin in every RED WING engine assures you dependable performance under all conditions. Rugged, durable, easy-to-maintain RED WING's have been bringing cargo to port on schedule for more than half a century.

Whatever your power needs, there is a RED WING designed to fill them.

Waiting your inspection at the Boat Show are the following new RED WING diesels:

D4 35-45 H.P. medium duty diesel . . . 144 cu. in. displacement . . . for craft 22-35 feet.

D6 80-100 H.P. marine diesel . . . new series of 6-cylinder engines . . . displaces 300 cu. in.

D6 100-145 H.P. heavy duty diesel . . . 426 cu. in. displacement . . . second of new series for boats 30-50 feet.

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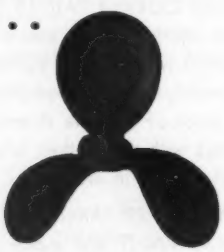
EXPERT RECONDITIONING ON PROPELLERS OF ALL SIZES . . .



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HYDE WINDLASS COMPANY

BATH, MAINE

HYDE
PROPELLERS

Fish Landings

For Month of December

Hailing fares. Figure after name indicates number of trips.

GLOUCESTER

Alden (2)	22,000	Lois T. (3)	17,500
American Eagle (5)	11,000	Lucy Scola (5)	12,000
Angie & Florence (1)	6,000		
Anna Guarino (6)	10,000	Madame X. (4)	9,500
Annie (3)	3,000	Margie & Roy (1)	500
Anthony & Josephine (5)	17,100	Margie L. (3)	4,000
Ave Maria (1)	20,000	Maria Immaculata (6)	33,400
		Maris Stella (1)	105,000
Baby Rose (1)	13,000	Mary (6)	10,300
		Mary E. (2)	2,000
California (1)	6,000	Michael F. Dinsmore (1)	4,000
Carlannsul (5)	6,000	Minkette 1st (10)	9,000
Carlo & Vince (3)	29,500	Mother Ann (2)	388,000
Carol Jean (2)	45,000		
Catherine (2)	1,500	Natale III (3)	35,000
Chanco (1)	45,000	No More (3)	5,500
Charlotte M. (1)	30,000	Novelty (4)	4,200
Cigar Joe (4)	26,500	Nyoda (1)	3,000
Clipper (2)	25,000		
Columbia (1)	150,000	Ocean Clipper (2)	58,000
Curlew (2)	265,000	Ocean Life (2)	510,000
		Ocean Wave (1)	16,000
Dawn (6)	15,500	Our Lady of Fatima (1)	56,000
Dolphin (3)	86,000		
Dorchester (2)	385,000	Peggy Bell (1)	1,000
Doris F. Amero (1)	20,000	Pilgrim (1)	85,000
Doris H. (4)	5,600	Pioneer (3)	15,000
		Princess (1)	6,000
Eddie & Lulu M. (6)	6,500	Priscilla (3)	2,000
Eleanor (1)	10,000	Puritan (1)	10,000
Eva M. Martin (3)	5,000		
Eva II (3)	3,500	Quincy (1)	190,000
Falcon (9)	43,200	Robert & Edwin (1)	1,500
Famiglia (1)	4,000	Rose & Lucy (2)	16,500
Felicia (1)	76,000		
Fiorence & Lee (1)	102,000	Sacred Heart (5)	6,200
Flow (1)	124,000	St. Francis (5)	22,000
Frances R. (6)	36,000	St John (2)	1,500
Frankie & Jeanne (4)	4,500	St. Joseph (3)	39,000
		St. Mary (10)	74,800
Gertrude E. (3)	1,600	St. Nicholas (1)	65,000
		St. Peter (1)	3,000
Hazel B. (3)	70,000	St. Providenza (6)	8,300
Helen B. (2)	14,000	St. Rosalie (2)	9,000
Holy Name (1)	3,000	St. Stephen (2)	5,500
		St. Theresa (4)	15,500
Ida & Joseph (1)	20,000	Salvatore & Grace (4)	42,000
Immaculate Conception (3)	19,500	Sammy C. (2)	1,000
Irma Virginia (4)	7,000	Santa Treza (2)	2,800
		Serafina N. (2)	26,000
Jackie B. (2)	23,000	Serafina II (6)	41,500
Jennie & Lucia (1)	22,000	South Sea (1)	37,000
Johnny Baby (7)	11,100	Sylvester F. Whalen (1)	165,000
Joseph & Lucia (1)	45,000		
Josephine P. II (1)	2,000	Theresa M. Boudreau (1)	50,000
Joseph S. Mattos (1)	170,000		
Josie II (6)	14,600	Villanova (1)	231,000
		Vincie N. (1)	9,000
Kelpie (6)	7,000	Virginia Ann (7)	22,400
Kingfisher (2)	450,500		
		White Owl (5)	6,500
Leonard & Nancy (3)	22,500	Wild Duck (1)	70,000
Linda B. (8)	27,000	Winthrop (2)	387,000
Little Flower (7)	35,500		
Little Joe (6)	25,800	Yankee (1)	8,000

Scallop Landings (Lbs.)

Dartmouth (1)	9,500

WOODS HOLE

Driftwood (1)	2,200	Priscilla V. (2)	5,900
Gertrude D. (1)	5,400	Roann (3)	8,400
Madeline (3)	8,900	Three Bells (1)	900
Nancy Lee (1)	2,700		

Scallop Landings (Lbs.)

Dorothy & Mary (1)	3,167	Pearl Harbor (1)	2,629
Gambler (2)	4,870	Smilyn (1)	2,540
Maridor (1)	3,675	Vandal (1)	7,677
Palestine (1)	7,589	Vivian Fay (1)	3,150

PORTLAND

Agnes & Elizabeth (4)	79,000	M. C. Ballard (2)	58,900
Alice M. Doughty II (6)	78,900	Medan (1)	205,300
Araho (1)	20,200	Sea King (3)	34,400
Batavia (1)	170,000	Silver Bay (1)	150,000
Dora & Peter (4)	25,400	Superior (1)	6,500
Elinor & Jean (2)	20,200	Theresa R. (2)	68,500
Ethelina (2)	25,200	Thomas D. (3)	90,600
Gulf Stream (1)	200,000	Vagabond (4)	66,400
John J. Nagle (1)	29,000	Wawenock (1)	92,800

Scallop Landings (Lbs.)

Adele K. (2)	12,330	Pocahontas (1)	8,823
Mary J. Landry (1)	1,800	Vandal (1)	3,387

BOSTON

Acme (1)	2,000	Manuel F. Roderick (2)	76,200
Addie Mae (1)	1,100	Margaret Marie (2)	9,100
Agatha & Patricia (3)	37,200	Marion & Alice (1)	36,400
Angie & Florence (1)	8,900	Mary & Josephine (1)	124,000
Arlington (2)	227,500	Mary Rose (1)	38,300
Atlantic (2)	119,300	Michael F. Dinsmore (1)	28,100
		Michigan (2)	136,800
Baby Rose (2)	90,100		
Bay (2)	140,800	Nancy B. (2)	25,000
Benjamin C. (1)	67,000	Nautilus (1)	47,000
Bonaventure (1)	28,100	Neptune (3)	272,400
Bonnie (3)	219,500	Notre Dame (1)	14,300
Bonnie Lou (2)	81,000		
Brighton (2)	99,800	Ocean (2)	219,100
Brookline (2)	116,000	Ocean Wave (2)	43,900
		Ohio (3)	131,300
Calm (2)	145,800	Olympia (3)	38,200
Cambridge (2)	127,500	Olympia LaRosa (2)	29,700
Carmela Maria (2)	10,100		
Carol & Jean (1)	24,200	Pam Ann (3)	172,900
Catherine Amirault (1)	61,000	Patty & Jean (1)	51,000
Catherine B. (Drag.) (2)	28,400	Phantom (2)	148,000
Catherine B. (L.T.) (1)	2,000	Philip & Grace (1)	78,000
Charlotte M. (1)	48,000	Pilgrim (1)	34,300
Comet (2)	126,700	Plymouth (1)	46,000
Crest (2)	141,700	Puritan (1)	75,000
Diana C. (2)	32,700	Racer (1)	95,000
Drift (2)	163,100	Raymonde (2)	120,000
		Red Jacket (2)	266,500
Edith L. Boudreau (1)	30,600	Rosa B. (2)	139,100
Elizabeth B. (2)	92,700	Rosalie D. Morse (2)	140,500
Emily H. Brown (1)	65,500	Rush (2)	124,200
Estrela (2)	140,500		
Evelina M. Goulart (1)	24,100	St. Anna (1)	5,300
		St. Anthony (2)	145,900
Famiglia (1)	5,400	St. Joseph (2)	42,400
Flying Cloud (1)	132,000	St. Peter II (1)	73,300
4-H-823 (1)	2,700	St. Rosalie (1)	37,400
Francis L. MacPherson (2)	110,500	St Victoria (2)	38,600
		San Antonio II (2)	9,000
Gaetano S. (2)	61,600	Santa Maria (1)	18,300
Geraldine & Phyllis (3)	50,500	Santa Rita (2)	4,800
		Savoia (2)	8,900
Hilda Garston (2)	124,500	Sunlight (1)	51,800
Holy Family (2)	135,800	Swallow (3)	372,700
Ida & Joseph (1)	21,700	Texas (3)	121,000
		Theresa M. Boudreau (1)	51,000
Jane B. (1)	51,800	Thomas Whalen (2)	102,500
J. B. Junior (2)	131,400	Tide (1)	111,500
Jennie & Lucia (1)	17,000	Triton (1)	83,300
Jorgina Silveira (2)	44,600		
Josephine F. (2)	6,000	Vincie N. (1)	14,600
Josephine P. II (2)	36,500	Virginia (2)	79,500
Killarney (2)	173,500	Wave (3)	396,800
		Weymouth (2)	130,200
Leonard & Nancy (1)	17,300	Wm. J. O'Brien (3)	313,000
Lucky Star (2)	110,300	Winchester (3)	312,100
		Wisconsin (2)	240,600
Mabel Mae (3)	164,900		
Maine (2)	194,500	Yankee (2)	71,700

NEW YORK

Carol Jack (1)	40,000	Malvina B. (1)	2,100
Felicia (2)	83,000	Positive (2)	125,100
Golden Eagle (3)	146,400	Tina B. (2)	114,000

Scallop Landings (Gals.)

Beatrice & Ida (2)	1,900	Enterprise (2)	1,600
Buzz & Billy (1)	675	Florence B. (1)	384
Carol Jack (1)	875	Miriam A. (2)	1,474
Catherine C. (1)	1,000	S. No. 31 (1)	575

NEW BEDFORD

Adventurer (3)	41,200	Marie & Katherine (1)	4,500
Angenette (1)	1,400	Mary & Joan (2)	34,500
Annie Louise (3)	18,400	Mary E. D'Eon (4)	22,000
Annie M. Jackson (2)	17,800	Mary Tapper (3)	57,500
Arthur L. (3)	31,000	Molly & Jane (2)	26,500
Austin W. (2)	10,700		
		Nancy Lee (1)	7,500
Capt. Deebold (3)	15,600	Nautilus (1)	36,500
Carl Henry (2)	43,500	Noreen (2)	61,300
Dauntless (3)	36,500	Pauline H. (3)	133,000
		Phyllis J. (5)	36,900
Elva & Estelle (2)	18,500		
		Roberta Ann (2)	30,200
Felicia (1)	23,100	R. W. Griffin, Jr. (1)	21,000
Gertrude D. (1)	12,500	St. Ann (3)	33,300
Gladys & Mary (3)	60,700	Santa Cruz (1)	6,000
Growler (3)	51,000	Sea Hawk (2)	13,600
		Sea Hawk (Boston) (2)	10,500
Harmony (2)	8,400	Shannon (2)	9,400
Huntington Sanford (1)	6,200	Solveig J. (3)	62,400
		Sonya (2)	12,600
Invader (3)	40,600	Stanley B. Butler (3)	107,500
		Susie O. Carver (2)	20,300
Jacintha (2)	58,300		
J. Henry Smith (1)	4,300	Teresa & Jean (3)	112,000
Jimmy Boy (1)	7,900	Three Pals (1)	3,300
Joan & Tom (1)	6,100	Two Brothers (3)	14,500
Joan & Ursula (3)	41,300		
Junojaes (3)	30,900	Venture 1st (2)	41,500
		Victor Johnson (3)	32,500
Katie D. (2)	64,000	Viking (1)	31,200
Kelbarsam (2)	12,600		
		Whaler (2)	50,400
Lorine III (1)	4,400	Winifred M. (1)	6,000
Louis A. Thebaud (3)	20,300		

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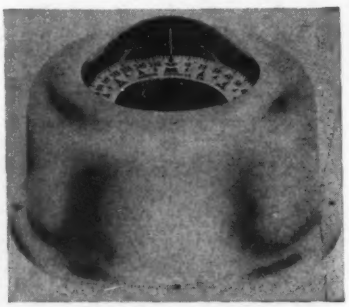

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This *Ida K* looks big and *is* big... And serviceable! —She's a deep-sea scallop dragger, owned by Wm. Kleb of Greenport, L. I.; recently repowered and modernized by Brigham's Shipyards at Greenport.

It's gratifying to us— and maybe significant to you— to know that Columbians were chosen as her new propeller-equipment: two 54x41 Hydrosonic 3-bladers... When years of experience have proven the character of a good boat, her *second* marriage is all the more likely to embrace Columbian!

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New Bedford Scallop Landings (Lbs.)

Abram H. (3)	14,000	John G. Murley (2)	13,000
Aloha (2)	14,000		
Alpar (2)	9,500	Kingfisher (3)	19,100
Amelia (2)	18,900		
Andarte (1)	9,500	Lauren Fay (3)	12,800
		Linus S. Eldridge (2)	21,600
Babe Sears (2)	21,600	Louise (2)	24,200
Barbara & Gail (2)	12,200		
B. Estelle Burke (2)	18,000	Major J. Casey (2)	7,500
Bobby & Harvey (2)	14,500	Malene & Marie (2)	9,600
Brant (2)	23,800	Maridor (1)	2,800
Bright Star (2)	15,000	Marmax (2)	18,000
		Martha E. Murley (1)	3,000
Carol & Estelle (3)	12,000	Mary Anne (2)	11,900
Carolyn & Priscilla (2)	10,500	Mary J. Hayes (2)	14,400
Catherine & Mary (3)	18,500	Mary J. Landry (1)	3,600
Catherine T. (3)	25,700	Mary R. Mullins (2)	19,300
Charles S. Ashley (3)	13,500	Moonlight (2)	27,900
Christina J. (1)	8,000		
		Nancy Jane (3)	18,200
Dartmouth (1)	10,000	Nantucket (2)	10,900
David A. (2)	8,300	New Bedford (2)	9,000
Debbie & Jo-Ann (3)	18,500	Newfoundland (3)	28,300
Doris Gertrude (2)	15,500		
Dorothy & Mary (1)	5,000	Pearl Harbor (2)	14,500
		Pelican (1)	10,000
Eleanor & Elsie (1)	3,500	Porpoise (3)	17,300
Elizabeth N. (2)	18,600		
Empress (3)	9,150	Red Start (2)	18,300
Ethel C. (2)	19,600	Ruth Moses (3)	11,900
Eunice-Lilian (2)	12,000		
		Sea Ranger (2)	13,100
Fairhaven (2)	16,600	Smilyn (2)	13,000
Falcon (2)	12,500		
Flamingo (3)	19,100	The Friars (2)	11,500
Fleetwing (2)	18,000		
Friendship (2)	9,500	Ursula M. Norton (3)	19,700
Ida K. (1)	8,100	Vivian Fay (2)	11,700
Janet & Jean (2)	7,100	Wamsutta (2)	14,800
Jerry & Jimmy (1)	8,500	Wm. D. Eldridge (2)	23,000
		Wm. H. Killigrew (3)	21,400

Georgia to Permit Commercial Trapping of Rough Fish

A law was enacted by the General Assembly recently that will permit the trapping of certain rough fish, and a new field for commercial fishermen is expected to result.

It will be legal to trap catfish, gar, carp, suckers, and other fish called by sports fishing authorities "rough" because they tend to decrease the population of fish valued by sports fishermen. The trapping must be done in a specially designed basket licensed by the State Game & Fish Commission.

Some of the rough fish are already valuable enough to be caught by commercial fishermen on lines, but they have been forbidden from using traps. The purpose of the new law is not to aid the commercial fishermen, but to aid sports fishing. However, reports from other states which have such laws indicate that in some cases commercial fishermen are provided sources of good income by the trapping method.

Shrimp Run Fair

Brunswick had a fair run of shrimp this year, according to Ray Sellers, new manager of the King Shrimp Co. He recently endorsed the January 1-March 15 mandatory closed season inaugurated this year to allow small shrimp to grow to marketable size.

The King plant, located at the shipyard, has such high standards of cleanliness that it is certified by the Agriculture Department for purchases by the armed forces without further inspection.

Growth of Breaded Shrimp Industry

In a short five years the breaded shrimp industry has grown into a multi-million dollar segment of the nation's seafood business. It accounts for nearly 40 per cent of the shrimp sold today and is responsible for more than 100 new brands. Its products sell out of more than 200,000 retail frozen food cabinets all over the country.

These facts were pointed out by J. Roy Duggan, vice president and general manager of the SeaPak Corp., St. Simons Island, who attributed the rapid development of the breaded shrimp industry to the "consistent high quality of the product."

Canadian Report

By C. A. Dixon

Anticipating Herring Strike

As 1954 enters the picture fishermen and others are mystified over the practically complete absence of sardines in southern New Brunswick waters. At the time of writing no fish are present in any of the fishing districts that usually produce sardines in varying quantities at this time of year. The seining fleet at Campobello remains idle and boats are tied up to their moorings in all the coastal communities.

Should the fish strike, a keen demand for them is assured, as the sardine packing plants both on the mainland shore and the islands in Charlotte County which have been practically idle for some months will be operated steadily if the supply is adequate for capacity production. In some of the plants stocks of canned goods have been exhausted and orders that cannot be filled at present are piling up. A subnormal pack in 1953 in both New Brunswick and Maine doubtless will mean a busy season in 1954 if adequate quantities of fish become available.

Scallops Scarce

Although scallop landings on the New Brunswick side of the Bay of Fundy have been small compared to other seasons, a small fleet of boats still ply back and forth to the various grounds. With low prices being paid for the bivalves, very little net earnings are realized by the fishermen, some of whom fitted out draggers for the first time when the Fall season opened. For a time a new bed of scallops was fished in the St. Andrews Bay area but the scallops soon petered out and the fishermen had to pick up what fish they could find on grounds which have undergone extensive dragging.

Green Crabs on Increase

Considerable anxiety is being felt by clam diggers in southern New Brunswick over the rapid increase in the numbers of green crabs which appeared in the Bay of Fundy area, particularly in Charlotte County bordering Maine, about two years ago. The menace has increased and the flats in some areas are infested with the crabs which feed on small clams. At the Atlantic Biological Station in St. Andrews the belief is expressed that a few cold winters would drive the crabs away.

New Fish Industry

A new company is reported to be planning to start processing fish scales at Digby, N. S. early this year, for the manufacture of pearl essence, used in button and paint-making.

Mearl Co. of Canada has been formed by Mearl Corp., Eastport, Maine, to handle all the fish scales Nova Scotia fishermen can produce.

Most of the scales are collected right in fishing boats. False bottoms are installed so that when the fish thrash around after being landed, their scales rub off and drop through slats of the false bottom, to be collected later.

The new plant is also expected to help weir fishermen financially, along the Bay of Fundy coast, where much herring which are excellent scale producers, are caught.

Capt. Edgar MacNeill

Capt. Edgar MacNeill, a widely known sardine boatman died at his home in South Portland, Me. last month. He was a native of Leonardville, Deer Island and as a young man freighted fish for Eastport sardine companies and later for those at Lubec and South Portland. At the time of his death he commanded the *Conqueror* for the R. J. Peacock Canning Co.

Morehead City Yacht Basin, Inc.

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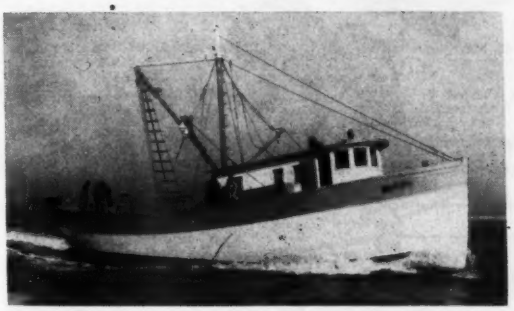

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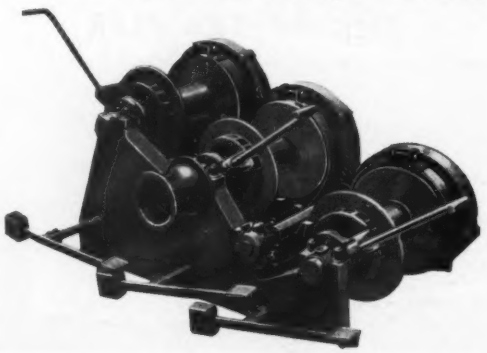

A Model 518T, 3-drum Stroudsburg Hoist is aboard the new 68 ft. Hatteras-type shrimp trawler "Betty" of Brownsville, Texas.

Successful shrimp fishermen everywhere know they can depend on Stroudsburg for a rugged hoist that stands up under hard, constant service.

Engineered for long life, Stroudsburg hoists are made in single, double and triple drum models.

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That is the reaction of practically every one of the hundreds of commercial craft owners who have switched from standard 3-4 blade wheels to the revolutionary new MICHIGAN STAR 5-blade wheel.

IT ELIMINATES RUINOUS STERN VIBRATION . . . INCREASES SPEED . . . SAVES FUEL . . . GIVES BETTER REVERSE AND STEERING.

Ask your dealer about the MICHIGAN STAR

In most cases conversion to the STAR requires no compensating adjustment of RPM, diameter or pitch. Costs only a little more than a standard 3-blade wheel.

MICHIGAN WHEEL COMPANY, Grand Rapids 3, Mich.

Florida University Studying Basic Cause of Red Tide

The University of Miami Marine Laboratory announced recently that it is pushing its study to find methods of predicting the appearance of the devastating red tide and preventing and controlling it.

Dr. F. G. Walton Smith, laboratory director, said use of chemicals to stop outbreaks of the fish-killing organism would be a needless waste of public funds if carried on without proper understanding of the basic causes of the epidemic.

Frank Chew, oceanographer, has carried on ocean current studies which show that the tide appears at the juncture of masses of water of different origins. The laboratory has succeeded in keeping the red tide organism alive for more than three months. This is the only time a miniature red tide has been produced in a laboratory for extended study.

The Sarasota Chamber of Commerce is asking other chambers in the area to urge appropriation of $200,000 for use by the Fish & Wildlife Service in studies along the West coast. The request for the money would be in the form of a readjustment of present Fish & Wildlife Service funds—not an outright new grant.

The chamber at Sarasota and other groups seek a floating experimental laboratory from which research could be carried on by the Government. Fish & Wildlife Service officials have reported a temporary station will be set up next Summer, probably at St. Petersburg.

Few Seek Gas Tax Refund

An act refunding part of the State gasoline tax to commercial fishermen began to pay off after January 1, but there were few takers.

Officials in the gasoline tax division said they believe commercial fishermen have not responded to the program because of the law's requirement that the gas be purchased from a gas distributor or his agent. Many fishermen fish from a landing where the fish house furnishes the gas.

Claims for refunds may not be less than $5 in any three-month period which means that an applicant must use at least 125 gallons during the period.

Protest No-shrimping Regulation

A temporary injunction to prevent State Conservation agents from enforcing a no-shrimping regulation in the Gulf from New Port Richey to Crystal Beach was scheduled for January 5.

The suit was filed by Attorney Harry Fogle on behalf of two Tampa shrimpers who were arrested and later re-

One of the smaller grouper boats that work the Gulf of Mexico out of Madeira Beach, Fla., preparing for a fishing trip.

leased on bonds. Fogle claims the regulation passed by the State Conservation Board November 3 in an attempt to close the area to shrimping, is too broad and vague.

The area in question supplies 80 per cent of the bait shrimp used in the St. Petersburg section.

Key West Spongers Enjoying Good Season

Key West spongers are enjoying their best season in years, according to a report from a local captain. Three locally based boats were operating last month, and one of them which returned to port for supplies reported good results.

Capt. Nelson Spencer of the *Ella Collins* had been fishing for four weeks. Two other boats, the *Gilbert* and the *Barat*, under command of Tillman Thompson and Ham Felton, were also operating in the area.

Fine Catches of Jumbo Shrimp

Huge catches of jumbo shrimp were landed at Fort Pierce last month. More than 1700 lbs. were brought in on the *Johnny Ray*, Capt. Raymond Singleton. The shrimp were caught within a quarter-mile radius off Fort Pierce's south beach.

Made President of Fishermen's Union

Lord Roberts of Nokomis has been chosen president of the Florida Fishermen's Union which has a membership from Everglades to Apalachicola. Roberts was named by stewards from 28 Florida West Coast ports. The group is affiliated with the United Packing House Workers of America.

Maryland Opens Drum Point Oyster Bar to Tonging

According to an announcement by the State department of fisheries, Drum Point Oyster Bar was opened for the tonging of oysters on December 14, and will remain open until further notice from the department of fisheries.

This bar, located in Lankford Creek of Lankford Bay was planted with seed oysters in the Fall of 1951 and has been closed to the taking of oysters since that date.

All oysters taken from this bar are subject to a tax of 20 cents a bushel in addition to the regular inspection tax to help defray the cost of the planting operation.

Tidewater Committee Meets

A meeting of the Maryland Tidewater Committee was held recently in Baltimore, attended by sportsmen, conservationists, representatives of research and State administrative agencies and officials of the Maryland Commercial Fisheries Association. A thorough review of bay-wide conservation activities was made with particular emphasis on the sportsman and commercial aspects of the problem.

Of especial interest and significance was the fact that the widely represented sports and conservation interests appeared to be anxious to cooperate with the commercial fishermen and that all concerned recognized that they constitute a team to do a common job on fisheries that are shared alike.

Oysters Growing on Shift Lever

When Hall Miles of Marion was nippering for oysters recently at the mouth of Coulbourn's Creek, in about 10 or 11 ft. of water, he saw a bunch of oysters, caught them with his tongs, raised them to the surface and found that they had attached themselves to what appeared to be a gear shift lever about three ft. in length. There was a cluster of between 60 and 80 oysters, and all of them had made a wonderful growth.

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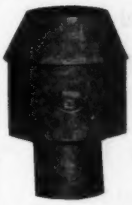

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Cape Cod Fishermen Oppose Removal of Lighted Buoys

Capt. Manuel P. Dutra, president of the Seafood Producers Association, announced recently that the buoys that mark the boundaries of the South Wellfleet firing range may be abandoned as an economy measure, although fishermen believe they are valuable in showing them the limits of the range during target practice.

Capt. Dutra said there are six buoys, three lighted and three unlighted, and he believes abandoning the unlighted buoys would cause no trouble—but the lighted ones should be continued to show the bounds of the range.

Conservation Work Outlined

Chatham Fishermen's Association, in cooperation with the Board of Selectmen, reported December 29 on work done during the last several years on shellfish conservation in Chatham waters.

The task has been made more difficult because of the feeding habits of the eider or scoter ducks that flock into the Pleasant Bay waters by the thousands. Favorite food of these birds is either seed scallops or mussels and each duck is capable of destroying a pint or more of seed shellfish a day.

The protection of mussel beds in the Chatham area is important since mussels provide bait for fishermen and the large mussel bed at the entrance of Pleasant Bay prevents starfish and other marine life from drifting or swimming up into the bay from outside waters to feed on scallops.

Several permits have been issued by the Fish & Wildlife Service to members of the Chatham Fishermen's Assoc. to herd, drive or kill eider or scoter ducks that threaten shellfish beds in the town of Chatham.

Provincetown Boat Goes South

The first Provincetown fishing boat to heed the call of the South and the shrimping industry left Provincetown on December 9 for Brownsville, Texas. Capt. Domingo Godinho was accompanied by two other Provincetown men, George Paine and his son George, Jr. aboard his 60-ft. *Clara M.*

Trap Fishing Continues

Trap fishing still was continuing in Provincetown harbor waters on December 21, much later in the season than usual, and a catch of fresh mackerel amounting to 41 barrels and one keg, a total of more than 6,200 lbs., was landed on the 19th.

The only traps still fishing, the Cape Cod traps in the cove, are operated by Capt. Ulysses Simmons, who, on the 19th, in addition to the mackerel, landed 40 kegs of sardines.

Launch Shellfish Research Project

In a move to bolster the coastal fisheries of Massachusetts, Gov. Herter and Francis W. Sargent, director of the Division of Marine Fisheries, last month launched a shellfish research project at Edgartown. Oyster Pond in Edgartown will be used by the new Department of Natural Resources to raise seed clams, oysters and quahogs.

The Governor explained this project was first recommended by Thomas L. Flynn of Edgartown and has since been endorsed and advocated by Rep. Joseph A. Sylvia and Edgartown selectmen.

Experimental plantings of quahogs, clams and oysters will be made in various sections of the pond to determine survival and growth rates after a complete hydrographic and biological study has been made both before and after opening the pond to the sea. Sargent said that he hopes this proposed shellfish sanctuary may become a source of supply for seed shellfish that can be transplanted to other coastal areas.

New Bedford Scallopers Consider Cooperative

New Bedford scallop boat owners are considering the establishment of a scallop-marketing cooperative to insure operating expenses of the fleet. A cooperative has long been talked about by both scallop boat owners and groundfish boat owners and the stimulus behind the plan by scallop owners is the low prices received for scallops in the past six months.

Announcement of the owners' intentions closely follows the fact that many boats have left New Bedford for Southern waters. If a cooperative is formed, it probably would bid on trips with other bidders at the morning auction or the owners might simply bring their catches to the cooperative.

More Draggers Go South

Four more New Bedford draggers last month joined the 17 other boats which have left this port for Southern waters. They were the *Rosie 2d, Eugene and Rose, Sea Hawk* and *Marie and Katherine.*

The draggers *Three Pals* of New Bedford and the *Conquest* and *Marion M.* of Newport, R. I. are fitting out for the voyage and it is reported they have been sold to Brownsville, Texas shrimp fishing interests. Four more local boats are tentatively scheduled to leave for the South.

Producing Pre-Cooked Scallops

Foresight of William D. Eldridge, treasurer of L. S. Eldridge & Son, Inc., has led to the establishment of a process of pre-cooking scallops. One of the few concerns in the country producing pre-cooked breaded shellfish, the scallops can be taken from the package, heated and served immediately.

Approximately 25 workers, including 23 women and 2 men are employed in the pre-cooking process. Edward L. Rodrigues is plant manager. From 7,000 to 8,000 lbs of scallops are cooked daily during the six-day week.

Scallop Catch Reduced by Starfish

Starfish are taking their toll on bay scallops in New Bedford waters. This year's invasion of local scallop beds by the five-armed echinoderms is described as one of the worst in the memory of area fishermen.

Destruction of the shellfish seedlings by starfish in years past also is making itself felt this season. The take of bay scallops since last October 1 has been below what was expected.

Tobias Cabral, New Bedford shellfish warden, said the infested areas primarily are in the vicinity of Butler Flats, near Egg Island and in Clarks Cove. While destruction by starfish is reported heavy in New Bedford waters, Dartmouth and Fairhaven shellfish wardens said their areas were relatively clean of the menace.

John J. Perry, Dartmouth warden said an annual appropriation of $500, augmented by $1,000 from the State, is used to pay fishermen at the end of the season to clean out the starfish. New Bedford and Fairhaven appropriate no money for the work. However, the three shellfish wardens said licensed scallopers of their respective towns are required to destroy any starfish they bring up in their drags.

Last year's total catch of scallops was 24,198 bushels. Up until the middle of last month the catch had amounted to 8,970 bushels.

New Area Opened for Quahog Dragging

Fairhaven Selectmen last month voted to approve the request of a delegation of fishermen for permission to drag for quahogs in Fairhaven waters South of a line drawn from Gilbert Street in Fairhaven to the stack of the Cornell-Dubilier Electric Corp.

The request had the approval of Tracy W. Marks, shellfish warden, who will set the date for the area to be opened to draggers.

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Brown Alarm Mfg. Co., Inc., 1631 Filbert St., Baltimore 26, Md.

ANCHORS
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Northill Co., Inc., Los Angeles 45, Calif.

BATTERIES—Storage
Bowers Battery & Spark Plug Co., Reading, Penn.
Crescent Battery & Light Co., Inc., 819 Magazine St., New Orleans 12, La.
"Exide": Electric Storage Battery Co., 42 South 15th Street, Philadelphia 2, Pa.
*Surrette Storage Battery Co., Salem, Mass.
Willard Storage Battery Co., 246 East 131 St., Cleveland 1, Ohio.

BOOTS
United States Rubber Co., Rockefeller Center, New York, N. Y.

CANS
Continental Can Co., 100 E. 42nd St., New York, N. Y.

CLOTHING
The H. M. Sawyer & Son Co., Cambridge, Mass.
A. J. Tower Co., 24 Simmons St., Boston, Mass.
United States Rubber Co., Rockefeller Center, New York, N. Y.

COLD STORAGE
Quaker City Cold Storage Co., Philadelphia, Pa.

COMPASSES
John E. Hand & Sons Co., 243 Chestnut St., Philadelphia 6, Pa.
*Marine Compass Co., Pembroke, Mass.
*Sperry Gyroscope Co., Division of the Sperry Corp., Great Neck, N. Y.
*Wilfrid O. White & Sons, Inc., 216 High St., Boston 10, Mass.

CORDAGE
American Manufacturing Co., Noble and West Sts., Brooklyn, N. Y.
*Cating Rope Works, Inc., Maspeth, N. Y.
*Columbian Rope Co., Auburn, N. Y.
*The Edwin H. Fitler Co., Philadelphia 24, Pa.
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Plymouth Cordage Co., Plymouth, Mass.
*Tubbs Cordage Co., San Francisco, Calif.

COUPLINGS—Marine
Morse Chain Co., 7601 Central Ave., Detroit 10, Mich.

DECK PLATES
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DEPTH FINDERS
Bendix Aviation Corp., Pacific Div., 475 Fifth Ave., New York 17, N. Y.
*Kaar Engineering Corp., Palo Alto, Calif.
Raytheon Manufacturing Co., 138 River St., Waltham 54, Mass.
*Wilfrid O. White & Sons, Inc., 216 High St., Boston 10, Mass.

DIRECTION FINDERS
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*Kaar Engineering Corp., Palo Alto, Calif.
Raytheon Manufacturing Co., 138 River St., Waltham 54, Mass.

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D. W. Onan & Sons, Inc., University Ave. S.E. at 25th, Minneapolis 14, Minn.

ENGINES—Diesel
The Buda Co., 154th and Commercial Ave., Harvey, Ill.
*Burmeister & Wain American Corp., 17 Battery Place, New York 4, N. Y.
Caterpillar Tractor Co., Peoria, Ill.
*Cooper-Bessemer Corp., Mount Vernon, O.
Cummins Engine Co., Columbus, Ind.
*Detroit Diesel Engine Div., General Motors Corp., Series 51, 71 and 110 Marine Diesels, 13400 W. Outer Drive, Detroit 28, Mich.
*Enterprise Engine & Machinery Co., 18th and Florida Sts., San Francisco 10, Calif.
Fairbanks, Morse & Co., Chicago, Ill.
Gray Marine Motor Co., 646 Canton Ave., Detroit, Mich.
Hallett Mfg. Co., 1601 West Florence Ave., Inglewood, Calif.
P&H Diesel Engine Division, Harnischfeger Corp., 100 Lake St., Port Washington, Wis.
Kermath Manufacturing Co., 5890 Commonwealth Ave., Detroit 8, Mich.
The Lathrop Engine Co., Mystic, Conn.
Murphy Diesel Co., 5317 West Burnham St., Milwaukee, Wis.
*The National Supply Co., Engine Division, Springfield, Ohio.
Nordberg Mfg. Co., Lincoln Bldg., 60 East 42nd St., New York 17, N. Y.
H. O. Penn Machinery Co., Inc., East River and 140th St., New York, N. Y.
*Perkins-Milton Co., Inc., 376 Dorchester Ave., South Boston 27, Mass.
*Red Wing Motor & Mfg. Co., Red Wing, Minn.
Scripps Motor Co., 5817 Lincoln Ave., Detroit 8, Mich.
Wolverine Motor Works Inc., 1 Union Ave., Bridgeport, Conn.

ENGINES—Gasoline
*Chris-Craft, Marine Engine Div., Algonac, Mich.
*Chrysler Corp., 12211 East Jefferson, Detroit, Mich.
*Ford Marined Engines, 3627 N. Lawrence St., Philadelphia 40-AF, Penna.
Gray Marine Motor Co., 646 Canton Ave., Detroit, Mich.
Kermath Manufacturing Co., 5890 Commonwealth Ave., Detroit 8, Mich.
The Lathrop Engine Co., Mystic, Conn.
Nordberg Mfg. Co., Lincoln Bldg., 60 East 42nd St., New York 17, N. Y.
*Red Wing Motor & Mfg. Co., Red Wing, Minn.
Scripps Motor Co., 5817 Lincoln Ave., Detroit 8, Mich.

ENGINES—Outboard
Evinrude Motors, 4760 N. 27 St., Milwaukee 16, Wis.
Johnson Motors, 6300 Pershing Rd., Waukegan, Ill.

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Fleck Engineering Co., Inc., 1631 Filbert St., Baltimore 26, Md.
Winslow Engineering Co., 4069 Hollis St., Oakland 8, Calif.

FISHING GEAR
*The Harris Co., Portland, Me.
Hunter Machine Co., Rockland, Me.
*Westerbeke Fishing Gear Co., Inc., 279 Northern Ave., Boston, Mass.

FISH MEAL MACHINERY
Enterprise Engine & Machinery Co., Process Machinery Div., 18th & Florida Sts., San Francisco 10, Calif.
*Standard Steel Corp., 5008 Boyle Ave., Los Angeles 58, Calif.

FLOATS
J. H. Shepherd Son & Co., Elyria, Ohio.

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The Buda Co., 154th and Commercial Ave., Harvey, Ill.
*Detroit Diesel Engine Div., General Motors Corp., Series 51, 71 and 110 Marine Diesels, 13400 W. Outer Drive, Detroit 28, Mich.
Hallett Mfg. Co., 1601 West Florence Ave., Inglewood, Calif.
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Sen-Dure Products, Inc., Bay Shore 1, N. Y.

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*"Pflueger": Enterprise Mfg. Co., 110 Union St., Akron, Ohio.

INSULATION
"Styrofoam" (Expanded Dow Polysytrene): The Dow Chemical Co., Midland, Mich.

LORAN
*Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.
*Sperry Gyroscope Co., Division of the Sperry Corp., Great Neck, N. Y.

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*The Fish Net & Twine Company, 310-312 Bergen Ave., Jersey City, N. J.
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*Columbian Bronze Corp., Freeport, N. Y.
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*Hyde Windlass Co., Bath, Maine
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*John A. Roebling's Sons Co., Trenton 2, N. J.
*Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corp., Palmer, Mass.

Nautical Facts

Courtesy of "Proceedings of the Merchant Marine Council"

Q. If you collided with a buoy or any other aid to navigation, to whom would you report?

A. A written report should be made to the Coast Guard.

Q. What is the logbook, and what entries are made in it?

A. The logbook is a *true* and carefully kept account and record of all things that take place on board a ship during a voyage, routine or otherwise. It is kept by the ship's officers and is variously referred to as the *rough log, bridge log,* or just the *logbook.*

Q. What are a watch officer's duties?

A. (a) Before taking charge of the watch to make himself thoroughly familiar with the position of the ship with reference to vessels in sight and any land, shoals or rocks in the vicinity, the general condition of the weather, speed, revolutions, running lights, and the Captain's Night Orders. (b) Report shore lights and unusual weather conditions to the Captain. (c) When in doubt about anything affecting the safety of the vessel call the Captain at once. (d) Keep a lookout posted from sunset to sunrise and in poor visibility. (e) In poor visibility put the engines on "Stand By;" start the fog signal; and notify the Captain. (f) Take an azimuth each watch, when possible, and whenever the course is changed; report any unusual error to the Captain. (g) In the event of fire, call the Captain at once and ring the alarm. (h) If a man falls overboard, act at once; stop the engines; throw over a buoy; and call the Captain.

Q. Which moves first when the rudder is put over, the ship's head or stern?

A. The ship's stern moves first.

Q. What is a twofold purchase?

A. A tackle made up from two double blocks where the standing and hauling parts are both at the same block. Its advantage is four.

Q. When do the International Rules apply?

A. On the high seas and outside the demarcation lines separating the high seas from inland waters.

Q. How often should chronometers be cleaned?

A. Every 3 or 4 years by an experienced watch or instrument maker. A greater interval than 4 years between cleaning will ruin a chronometer.

Q. What is the weight of the deep-sea lead?

A. Thirty to one hundred pounds.

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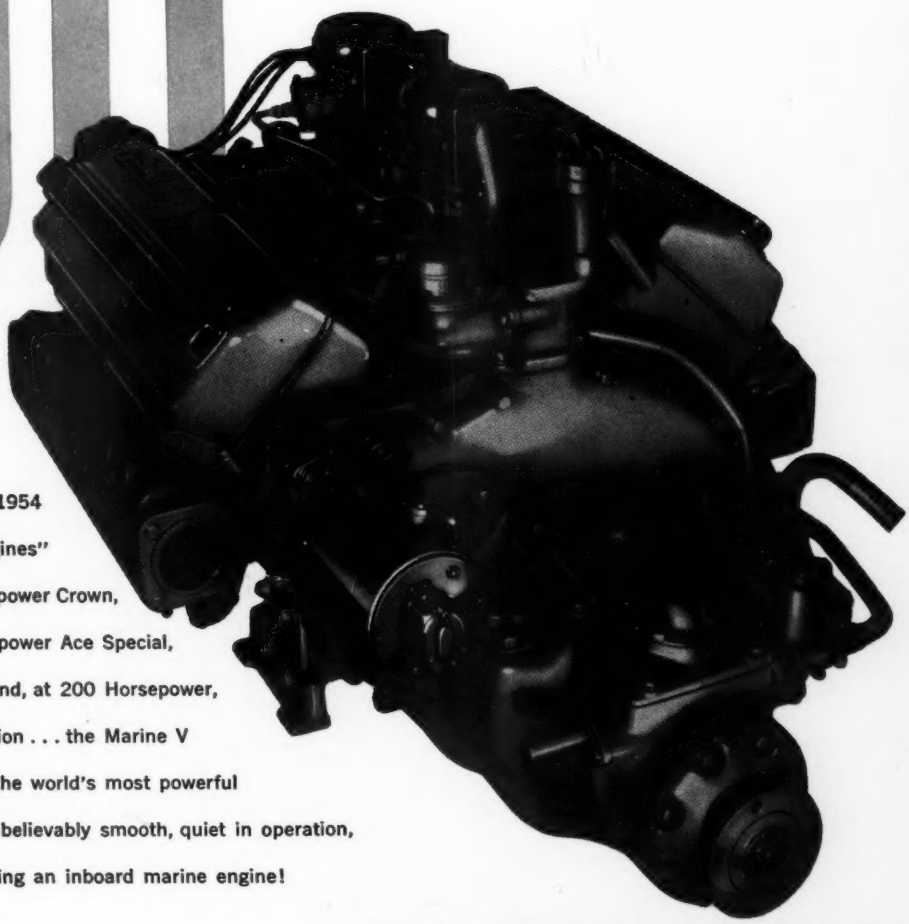

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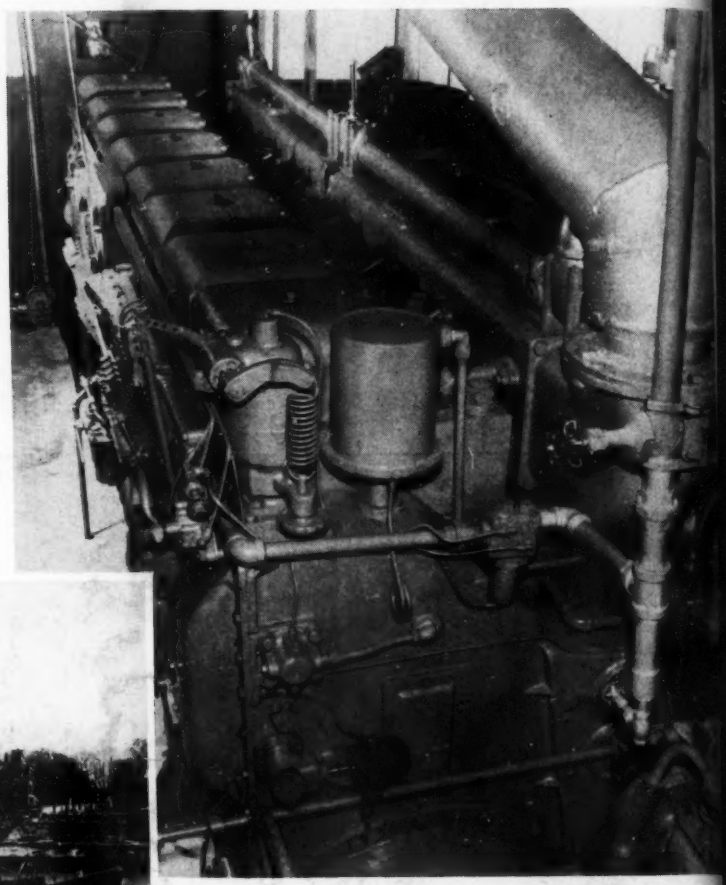

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